UNIV.OF
TORONTO
LIBRARY

Physical &
Applied Sci.
Serials

Digitized by the Internet Archive
in 2010 with funding from
University of Toronto

http://www.archive.org/details/p1saminingengine33joha

Physical &
Applied Sci.
Serials

Registered at the General Post Office as a Newspaper.

THE SOUTH AFRICAN MINING AND ENGINEERING JOURNAL.

The Only Weekly Mining Paper in the Continent of Africa.

THE South African MINING AND ENGINEERING JOURNAL

Established 1891

Published every Saturday

Vol. XXXIII., Part I., No. 1588.] JOHANNESBURG, TRANSVAAL, SATURDAY, MAR. 4, 1922. [Weekly, Price 6d.

LIBRARY APR 12 1922 UNIVERSITY OF TORONTO

LIBRARY APR 12 1922 UNIVERSITY OF TORONTO

Physical & Applied Sci. Serials

UNIVERSITY OF TORONTO APR 19 1922

33' = R1

249596 10 12:30

MAKE A FRESH START WITH

INGERSOLL-RAND ROCK DRILLS

INGERSOLL 'JACKHAMERS' AND LEYNER DRILLS
HAVE BEEN TRIED AND PROVEN UNDER SEVEREST CONDITIONS.
10103
DDR 13 Jackhamer
BCR 430 Jackhamer on JC 10 Mounting with Sliding Cone 43½" Feed
No. 18 Ingersoll Leyner Drill.

Also in South African Stock for immediate delivery:
Air Compressors of various types and sizes. Air Receivers. Air Lift Pumps. Little Tugger Hoists. Cameron Pumps, Simplex and Centrifugal Types. Little David Pneumatic Tools. Drill Sharpeners. Hollow Drill Steel. Air Hose. Oil and Grease.

INGERSOLL-RAND CO.,

NATAL BRANCH:
338a, SMITH STREET,
DURBAN.
P.O. Box 811.
Telegrams: "OUTSIDER."

HEAD OFFICE IN AFRICA:
EXPLORATION BUILDINGS,
JOHANNESBURG.
P.O. Box 1809.
Telegrams: "OUTSIDER."

AGENTS FOR RHODESIA:
JOHNSON & FLETCHER, LTD.
BULAWAYO. GATOOMA. SALISBURY.
AGENTS FOR CAPE PROVINCE:
ROGERS-JENKINS & CO.
CAPE TOWN. .. PORT ELIZABETH.

TN
1
S13
v.33
pt.1

ROBERT HUDSON & SONS, LTD.

Representing ROBERT HUDSON, LTD., Gildersome Foundry, near Leeds.

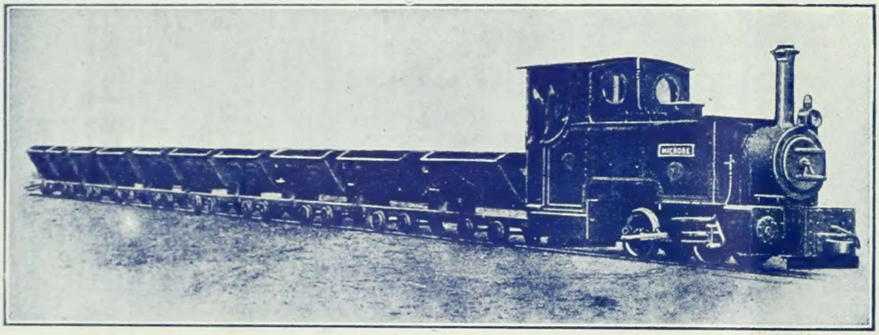
Manufacturers of

STEEL RAILS.
STEEL SLEEPERS.

HUDSON RAILWAY MATERIAL

POINTS & CROSSINGS.
ACCESSORIES.

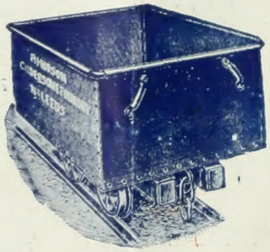
Light Locomotives



STEEL WAGONS FOR GOLD AND DIAMOND MINES, HOPPER WAGONS, SUGAR CANE WAGONS, COLLIERY TUBS, SISAL WAGONS, CONTRACTOR WAGONS, WHEELS AND AXLES, BEARINGS.

Self-Oiling
Wheels
and
Axles.

Stocks held at
JOHANNESBURG, DURBAN, DELAGOA BAY, BEIRA, SALISBURY, MAURITIUS, LOANDA.



DURBAN BRANCH: P.O. Box 1007, Durban.
DELAGOA BAY BRANCH: P.O. Box 177, Lourenco Marques.
BEIRA BRANCH: P.O. Box 292, Beira.
LOANDA BRANCH: P.O. Box 265, Loanda.

MAURITIUS BRANCH: P.O. Box 118, Port Louis.
RHODESIAN AGENTS: Stewarts & Lloyds (S.A.) Ltd., P.O. Box 163, Salisbury.
CAPE TOWN AGENTS: Stewarts and Lloyds (S.A.), Ltd. P.O. Box 722, Cape Town.

PRICES AND SPECIFICATIONS ON APPLICATION.

Head Office: CULLINAN BUILDING, JOHANNESBURG.

P.O. Box 5744. **Telephones 6428 and 6429.** **Telegrams: "RALETRUX."**

INDEX

TO

THE SOUTH AFRICAN MINING & ENGINEERING JOURNAL

JOHANNESBURG.

Vol. XXXIII. Part 1. March ~~2nd~~ 4th, to ~~August 26th~~ Sept. 16, 1922.

ANALYSIS OF INDEX.

List of Principal Headings in the following Index, with pages on which they may be found.

	Page
Annual and Extraordinary General Meetings and Reports, Monthly and Quarterly Reports, Consulting Engineers' Reports	i.-ii.
Correspondence	ii.
Dividends	ii.
Leading Articles	iii.-iv.-v.
Engineering	ii.-iii.
General	iv.-v.
Illustrations and Maps	v.-vi.
Outputs	iv.
Contributed and Special Articles	vii.
Statistical and Financial ..	iv.

MEETINGS AND REPORTS.

A.

African Oil Corporation, Ltd. (a), 1212.
Albu Mines (a), 1325
Anglo-American Corporation (a), 1378.
Aurora West United Gold Mining Co. (a), 1422.
Aurora West United Gold Mining Co. (a), 1325.
Aurora West United Gold Mining Co., 1731.

B.

Bailey Group. The (q), 938.
Bantjes Consolidated Mines, Ltd. (a), 1251.
Bantjes Consolidated Mines, Ltd. (a), 938.
Barberton Activity (April), 1351.
Barberton District Mine Owners' and Managers' Association (a), 1193.
Barnato Group, 1417.
Barnato Mines. The Year with the (a), 1118.
Barnato Mines Development (q), 1595.
Biltong Asbestos Co., Ltd. Prospectus of the, 984.
Brakpan Mines (a), 1344 IV.
Brakpan Mines, 1187.
Brakpan Mines (q), 1630.
British Fuel Research Board. Report of the, 1628.
Bulawayo Water-works (a), 1515.
B'wana M'Kubwa Copper, 917.

C.

Cape Asbestos (a), 1621.
Central Mining and Investment Corporation (a), 1499.
Chamber of Mines Annual Meeting—President's Address, 1021.
Chamber of Mines (q), 1469.
Cinderella Consolidated (a), 1325.
Cinderella Consolidated, 1422.
City Deep (a), 1161.
City Deep's Position (a), 1125.
City Deep (q), 1633.
C.M.S. Subsidiaries. Progress on (q), 1630.
Consolidated Diamonds (a), 1302.
Consolidated Langlaagte (a), 1118.
Consolidated Langlaagte, 1418.
Consolidated Main Reef (q), 1633.
Consolidated Mines Selection Group (q), 969.
Coronation Syndicate Meeting, 1109.
Coronation Syndicate. A correction, 1121.
Crown Diamond Mining and Exploration Co. (a), 1521.
Crown Diamond Mining and Exploration Co., 1344.
Crown Diamond Mining and Exploration Co., 1320.
Crown Mines. The Year with the, 1160.
Crown Mines (a), 1375.

D.

Daggafontein Mines (a), 1344 VI.
Durban-Roodepoort Deep (a). 1377.
Durban-Roodepoort Deep, 1029.
Diamond Fields of Africa, Ltd. (a), 97.

E.

Elandslaagte Collieries, 969.
E.R.P.M. (a), 1312.
E.R.P.M. Position. The (a). 1163.

F.

Falcon. The position of the (a), 1041.
Far East Rand State Leases, 1186.
Ferreira Deep (a), 933.

G.

Gaika. The position of the 1606.
Geduld Year. The, 1027.
Geduld Proprietary Mines, Ltd. (a), 1344 XI.
Geduld Proprietary Mines, Ltd. (q), 969.
Geduld Proprietary Mines, Ltd. (q), 1658.
Geduld Progress. Splendid Ore Reserve Position (a), 1288.
Geldenhuis Deep (a), 1313.
Geldenhuis Deep Year (a), 1226.
Geldenhuis Deep (q), 1633.
General Mining and Finance Group (q). 1069 (a) 1325.
Geneva Conference (Mr. Gemmill's Report), 1100.
Globe and Phoenix (Rhodesia) (a), 1275.
Goldfields Group (q), 969.
Goldfields Mines. Progress on (q). 1596.
Goldfields Rhodesian Development Co., Ltd., 1209.
Gold Mines. Latest from the, 1553.
Government Gold Mining Areas (a), 1420.
Government Gold Mining Areas (a), 1186.

H.

Hartebeestpoort Irrigation Works, 1154.

I.

Irrigation (a), 1171 and 1103.

K.

Kalahari Diamonds (a), 917.
Knights Deep, 1118.
Knight Central (a), 1118; (a), 1344 III.
Knight Central's Life, 1135.
Kolmanskop Diamonds (a), 1136.

L.

Langlaagte Estate (a), 1118.
Langlaagte Estate (a), 1417.
Lonely Reef. The (a), 1359 and 1515.
Lonely Reef Progress (q), 1121.
Luipaardsvlei Estate. The Truth About, 977.

M.

Mashonaland Agency (a), 1440.
Messina Company. The Year with the (a), 1650.
Messina Copper (a), 1587.
Meyer and Charlton (a), 1325.
Meyer and Charlton (a), 1422.
Minerals Separation (1921), 1678.
Modderfontein B., 1311 and 1633.
Modder "B" Prospects (a), 1301.
Modder "B" Prespects (a), 1093 and 1495.
Modderfontein Deep Levels, Ltd. (a), 1344 I.
Modderfontein Deep Levels (q), 977.
Modder Deep Year, 1025.
Modder East's Outlook (q), 913.
Modder Shares, 1559.
Mozambique Company (a), 1125.

N.

Namaqua Copper (a), 1347 and 1393.
Netherlands Bank Report, 1530.
New Era Consolidated (a), 1344 VI.
New Goch (a), 1325.
New Goch (a), 1423.
New Kleinfontein Position (a), 1227.
New Kleinfontein. The Position and Prospects of the (a), 1397.
New Kleinfontein (q), 1633.
New Primrose (a), 1118.
New Primrose (a), 1417.
New Rhodesian Mines Reconstruction (a), 1013.
New State Areas (a), 1119; (a), 1419.
New State Areas. Government Inspector's Report. 1127.
New Steyn Estates Gold Mines, Ltd. (a), 1425.
New Steyn Estates Gold Mines, Ltd. (a), 1325.
New Unified Main Reef (a), 1118.
New Unified Main Reef (a), 1417,
Nigel's Outlook. Latest Report. 1681.
Nourse Mines. Improving position of, 1437.

O.

Ohlssons South African Breweries (a), 1576.

P.

Planet Arcturus Gold Mines, 1559.
Planet-Arcturus Gold Mines (a), 1515.
Premier Annual Reports. More points from the, 941.
Premier Company and the Diamond Outlook (a), 917.
Premier (Transvaal) Diamond Mining Co., Ltd. (a) (Dir.), 956.
Pretoria Silver-Lead (Capital for Development), 1441.
Princess Estate (Extraor. gen.), 917.

R.

Rand Collieries (a), 1425 and 1325.
Randfontein Central, C.E. (a), 1126.
Randfontein Central (a), 1459.
Randfontein Estates (a), 1459.
Rand Mines (a), 1373.
Rand Selection Corporation (a), 1344 VII.
Rand Water Board (C.E.) 1141 (a), 1571.
Rezende Mines (a), 1359.
Rezende Mines, Ltd. (q), 1274 and 1644.
Rhodesia Broken Hill (a), 1694.
Rhodesian Chamber of Mines Annual Meeting, 1043.
Rhodesia Copper and General Exploration and Finance Co. (a), 1562.
Rhodesia Copper, 1629.
Rhodesian Gold Mining and Investment Co., Ltd. (a), 1359.
Rhodesian Gold Mining and Investment Co., Ltd., 1515.
Rhodesian Mining. A Year's Progress, 1333.
Rhodesian Railway Finances and Engineering (q), 1142.
Riet River Diamond Syndicate (Prospectus), 1123.
Robinson Deep, Ltd. (a), 1213.
Robinson Deep. The Steady Progress at the, 1463.
Robinson Deep (q), 969 and 1596.
Robinson Gold Mining Co. (a), 1344 III.
Robinson Gold Mining Co. (q), 1633.
Robinson's Outlook (a), 1029.
Roodepoort United Main Reef (a), 1325.
Roodepoort United Main Reef 1423.
Rose Deep (a), 1312.
Rose Deep Results, 1099.
Rose Deep (q), 1633.
Rose Deep Prospects, 1301.

S.

Sacke Estates and Mining Co., Ltd. (a), 1425.
Sacke Estates and Mining Co., Ltd. (a), 1325.
S.A. Townships Group. Quarterly Reports, 1274.
S.A. Townships, Mining and Finance Corporation (a), 1381.
Shamva Mines, 1696.
Shamva Mines Results (a), 1606.
Shamva Profits and Ore Reserves (q), 1177.
Shamva Profits and Ore Reserves (Rhodesia) (q), 1275.
Sheba Mining Policy, 1068.
Simmer and Jack Proprietary Mines (q), 933.
Simmer and Jack (q), 1596.
Slangapies Coal and Oil Shale Exploration. Prospectus of, 1490.
Springs Mines, 1187.
Springs Mines (a), 1344 VII.
Springs Mines (q), 969.
Springs Mines (q), 1630.
Standard Bank (a), 1674.
State Areas. Inspector's Report (q), 1274.
State Mines' Record Year (C.E.), 1124.
Sub Nigel (q), 1596.

T.

Tanganyika Concessions (a), 1483.
Tanganyika Concessions Progress, 1361.
Tanganyika Concessions, 1302.
"T.C.L." The Mining Activities of the, 1067.
"T.C.L.". Capital, 916.
T.G.M.E. Mining and Financial position of (C.E.), 1603.
Transvaal Gold Mining Estates (q), 1633.
Transvaal Manufacturers (q), 1273.
Transvaal Silver and Base Metals (q), 1595.

U.

Union Corporation Finances (a), 1064.
Union Corporation Group (q), 969 and 1069.
Union Corporation's Report (a), 1344 X.
Union Miniere (a), 1361.

V.

Van Ryn Deep (a), 1419.
Van Ryn Deep Results, 1119.
Vereeniging Estates. The Year with the, 1707.
Vereeniging Estates (a), 1736.
Village Deep. The (a), 1313.
Village Deep. The (q), 1633.
Village Deep Finances, 1301 and 1091.

W.

Water Board and the General Strike. The Rand (C.E.), 1141
West Rand Consolidated (a), 1424.
West Springs (a), 1344 IX.
West Springs, 1187 and 1497.
West Springs (q), 1291.
West Springs Improving Development (q), 1613.
Willoughby's Consolidated (a), 1679.
Witwatersrand Deep (April), 1274
Witwatersrand Deep Development (q), 1621.
Witwatersrand Gold Mining Co. (a), 1418.
Wolhuter Gold Mines, Ltd. The (a), 1013.

CORRESPONDENCE.

A

Administrator. A letter from the—G. A. Robertson, 1008.
Alloy Welding Processes, 931.
Alluvial Gold Recovery Plant—By Miner, 1539.
Ambulance Competition. Native Mine—By Fred Rowland, 1565.
Amsterdam Conglomerates. The—By Scott Alexander, 1364.
Appeal of Prime Minister (Distress).—By A. E. Charter, (Hon. Sec.), 1041.
Appreciation. An — By Scott Alexander, 1008.
Aurora West United's Brighter Prospects—By Valuator, 1661.
Aurora West United—By Valuator, 1628.

B.

Bank Charges Handicap Industry? Do, 1596.
British S.A. Explosives Company, Ltd. John Hungerford, 1539.

C.

Coal Trade. Our Bunker and Export—By A. Danks, 1693.
Cornish Miners—By Wm. Cullen, 1447.
Cost per oz. won versus cost per ton milled—By L. P. Sheridan, 1661.

D.

Diamond Industry. The Passing of the—By E. E. Buttner, 951.
"Diamond Miner." A reply to—By P. Macadam, 1325.
Diamond Washing Machine Wanted — By "Diamond Miner," 1249.
Dormant Mines of the Far West Rand—By W. P. Taylor, 1565.
Dumping and the Rubber Trade—By Trader, 1511.

F.

Far West Rand. The Dormant Mines of the—By W. P. Taylor, 1565.

G.

Gold from Black Sands. Recovery of—By L. P. Sheridan, 1565.
Gold Mines Return. What Rand—By Lewis Watkins, 1278.

H.

Heidelberg Gold Reefs—By John Moffat, 1364.

I.

Iridium—By A. F. Crosse, 1249.
Ironstone of the Pretoria Series—By Scott Alexander, 1661.

J.

Joint Council of Europeans and Natives—By J. A. Hamilton, 1539.

L.

Labour and the League of Nations—By G. E. De Palma Castiglione, 1402.
Labour Views. Some—By L. P. Sheridan, 1693.

M.

Mine Stores—By Junius Junior, 1278.
Mining Industry Board—By J. Collie, 1628.
Mining Share Values—By Speculator, 1706.

N.

New West Bonanza Gold Mining Co., Ltd.—By F. Eckler, 931.

O.

Oil Enterprises. A Query—By Dissatisfied, 1447.
Oil Outlook—Professor Shand's Views, 1511.

P.

Prospectors. State Aid for—By C. Howard, 1475.

Q.

Quartz. Transparent—By Enquirer, 1693.

R.

Reserve Bank. The South African—By Fred R. Lees, 1596.
Rubber Trade. Dumping and the—By Trader, 1511.

S.

S.A.M.W.U. Pessimist—By L. P. Sheridan, 977.
Scab. In defence of the, 931.
Scott-Alexander. An appreciation of Mr., 1539.
"Small Man." To help the—By C. S. Alexander, 1511.
Stope Lay-out. A Criticism of the New Standard—By R. I. Simpson, 1066.
State Aid for Prospectors—By C. Howard, 1475.

T.

Tanganyika Territory. Gold in—By H. Merensky, 1661.
Tractors, Steam versus Petrol—By Bell and Gifford, 1304,

U.

Unemployed? Why—By P. Macadam, 1194.

DIVIDENDS.

C.

Consolidated Gold Fields, 923.

D.

De Beers Dividends, 1537.
Dividends, 1496.
Dividends. The Half-Year's, 1434.
Dividend Payments, 1669.
Dividend Prospects, 1155.
Dividends. Some 1922, 1057.

J.

June Dividends. The—By Edgar H. Hyman, 1353.

R.

Rhodesian Mining Companies, 1921, 1043.
Shamva Mines Dividend, 1497.
Sub-Nigel, Ltd. Dividend No. 19, 1520.
Van Ryn Mines. Dividend No. 37, 1497.

ENGINEERING.

A.

Alloys. Wonderful New, 1372.
Artificial Daylight, 1173.
Australia's Relations with former Alien Countries, 927.
Automatic Furnace Control, 1040.

B.

Bricks from Slimes. 1173.
British Empire Exhibition 1924, 1544.
“Broken Tools” By J. A. Holden (Illustrated) 950

C.

Centrifugal Fan. The Blackman Keith (Illustrated) 1139
Coin Making Machines, 1544.
Congo State. Transport in the, 1262.
Corrugated Iron. A Substitute for, 1372.

D.

Drilling Organisation. World's Record, 1077

E.

Electrical Research, British, 1140
Electrical Research, Latest Progress, 1039.
Electricity Bill. The, 1450.
Electricity Bill. Views on the, 1543.
Electricity Supply. The Control of, 1365.
Electrification. Natal Railway, 925.
Electrification of the South African Railways, 1263.
Elevator Foundation Troubles, 1364.
Engineer and the Future of South Africa. The 1171.
Engineers and the Johannesburg Municipal Power Station, 994.
Endless Rope Haulage at Modder East, 1449.

F.

Furnace Control. Automatic, 1040.

G.

Gears. The Rapid Making of, 1544.
General Electric Co. The, 951.

H.

Hadfield Breakers. The, 1203.
Hammer Drills. Standardisation of, 1265.
“Hysteretic Repulsion,” 1172.

I.

Industrial Advances, British, 1140.
Irrigation Engineering, 1171.

K.

Kinematograph in Engine Design, 1202.

L.

Locomotive. Still Improving the, 1040.
Lonely Mine Gas Engine Efficiency, 1202.

M.

Magnetic Separation. A New Method of, 1521.
Matzap Nitrates, 1451.
McLellan Rock Drill Bit (Illustrated)—By H. A. Kee, 1201.
Mozambique Cement Factory. New, 1411.

N.

Natal Railway Electrification, 925.
New State Areas' Plant. [illegible] Hadfield Breakers, 1203.

P.

Port Elizabeth's New Electric Power Plant, 1262.
Pneumatic Plant for Reef Work, 1203
Producer Gas Power Plant, 975.

Q.

Quicksilver in South Africa, 1727.

R.

Radium Mining in Cornwall, 927.
Rails. The Mystery of “Roaring,” 1041.
Railway Electrification, 1266.
Railway Electrification and Industrial Development, 1340.
Railway Electrification in England, 1202.
Rand Water Board Contracts, 1140.
Road Transport in South Africa, 1412.
Rope Haulage at Modder East. Endless, 1449.

S.

Spanish Northern Railway Electrification Project, 927.
Steam versus Petrol Tractors, 978.
South African Railways Electrification, 1263.

T.

Timber. The Preservative Treatment of Rand Mine—By L. D. Hingle, 1075.
Timber. The Treatment of Mine, 1727.
Trade Outlook. The, 1040.
Tractors. Steam versus Petrol, 978.
“Transverter.” The, 1503.
Turbine Plant. A Useful Adjunct to, 952.
Turbo Generator. Big, 1261.
Transport in the Congo State, 1262.

V.

Vaal River Barrage. Rand's Great Water Undertaking, 1571

EDITORIAL.

LEADING ARTICLES & TOPICS OF THE WEEK.

A.

Agitators Cost. What, 1234
Agreement. That Infamous, 1300.
Anglo-Americans and Diamonds, 1355.
Autocracy of the Democrats, 1234.

B.

Bailey Hits Out! Sir Abe, 1357.
Bankers Review. A, 1505.
Barnato Group. The, 1129.
Barnato Meeting. The, 1407.
Basic Industries, Protection of the, 1199.
Budgets. The Two (Finance and Railways), 1236.
Business Outlook. The, [illegible]

C.

Central Mining Engineer's Report 1568.
Central Mining Meeting, 1536.
Cerberus. A Sop to, 1270.
Chamber of Mines. A last word from the, 1599.
Chamber of Mines Meetings, 1031.
Chamber and the Unions. The, 1624.
Cheap Money, 1654.
City Deep, 1331.
C.M.S. Group. The, 1330.
Coal Grading Bill. The, 1200.
Coal Mines and the Mining Board, 1405.
Coal Mines. Hours on the, 1443.
Coal Prospects, 1505.
Coinage Bill. The, 1537.
Collieries and the Strike, 944.
Colour and the Mines, 1198.
Conciliation Boards. The, 1719.
Conciliation Board. Next Week's Conference and the Proposed, 1653.
Conciliation Conference, 1687.
Conciliation Policy, 1567.
Conference. Another Mining, 1329.
Corner House and the Lions. The, 1270.
Coronation Syndicate and Luipaardsvlei No. 10, 1095.
Crown Mines Meeting, 1356.

D.

De Beers Dividends, 1537.
Delville Wood Memorial. The' 1506.
Developers. Dissatisfied, 1300.
Diamond Industry Prospects, 1302.
Diamond Outlook. The, 1505.
Diamond Outlook. Brighter, 1687.
Diamond Revival. The, 1405, 1567, 1719.
Dismissal and “Lightning” Strikes. Notice of, 1443.
Dumping. A Question of, 1479.

E.

Efficiency and Bonus Schemes, 1600.
Employers' Tax Abandoned, 1568.
Engineering Advances in South Africa, 1406.
E.R.P.M. The Position of the, 1301.
Evidence. The Avalanche of (Miningy Industry Board), 1358.
Ex-Enemy Shares and Property, 1600.
Ex-Enemy Shares produce £4,000,000, 1406.

G.

Geldenhuis Deep's Future, 1301
General Mining Group. The, 1407.
Genoa, 1197.
German Debacle. The Latest, 1688.
Gold and Currency, 1406.
[illegible] the, 1200.
Gold Law Reform, 919.
Gold. The Price of, 1535.
Gold Refinery. The World's Greatest, 1568.
Gold Supply. The World's, 1623
Government, the Chamber of Mines and the Strike. The, 943

H.

Hays [illegible] 1198.
Heidelberg Gold Reefs, 1506.

I.

Immigration. The Prime Minister and, 1445.
Indemnity Bill. The, 1032.
Industrial Commission. The, 1032.
Industries. Protection of the Basic, 1199.
Industry Recuperating. The, 1071.
Industry. Sir Lionel Phillips on the, 1477.
Industries. Union Taxation of, 1536.
Iron and Steel Industry. The, 1299.

J.

Jeppe on the Outlook. Sir Julius, 1358.
Johannesburg. The Future of, 1478.

K.

Katanga's New Route to the Coast, 1237.
Knight Central, 1330.

L.

Labour Returns. Recent, 1406.
Labour States its Case, 1271.
Labour View. The, 1235.
Langlaagte Proprietary. The, Romance of the, 1356.
Laws. Our Mining, 1236.
Leeuwpoort Tin and the Metal Slump, 1356.
Legislation. Hasty Mining, 1301.
Legislative Programme. The, 1355.
Lehfeldt's Evidence. Professor, 1300.
Lloyd George and Smuts, 1197.
Life of the Rand. Doubling, 1477.

M.

Messina Re-starting, 1299.
Minerals Separation and South African Ores, 1719.
Miner's Phthisis Research, 1479.
Mining Industry Board, 1300, 1358, 1233, 1599.
Mining Industry Critics, 1444.
Mining Laws. Our, 1236.
Mining Legislation. Hasty, 1301.
Mining Outlook. The, 1623.
Mining. The Risks of, 1444.
Modder “B” Prospects, 1301.
Money. Cheap, 1654.

N.

National Bank and its Losses. The, 1269.
Native Labour, Shortage of, 1271
Native Labour Supply. The Mine, 1478.
Native and the Strike Weapon, 1479.
Nigel. The Future of the, 1358.

O.

Outlook. Sir Julius Jeppe on the, 1358.
Outlook. The, 1535.

P.

Phillips. Sir Lionel on the Industry, 1477.
Premier an Optimist. The, 1299.
Provincial Council Imposts, 1443, 1478.

R.

[illegible]
[illegible]
[illegible]
[illegible]
[illegible]
[illegible]
[illegible]
[illegible] 1536.
[illegible]
[illegible]
[illegible]
[illegible] came a, 1235.
[illegible]
[illegible] 1653.
[illegible]
[illegible]
Royal Dutch and Transvaal Shale [illegible]

S.

[illegible]
[illegible]
[illegible] 1536.
[illegible]
[illegible] 1535.
[illegible]

T.

Tanganyika Concessions, 1302.
Taxation. The Burden of, 1357.
Taxation Run Mad, 1405.
[illegible]

U.

Unemployment Commission. The, [illegible]
[illegible] Suggestion, 1005.
Union Corporation Group. The, [illegible]
Union Miniere. The, 1623.
[illegible]
Union Taxation of the Industries, 1736.

V.

[illegible]
[illegible] look, 1301.

W.

[illegible] 1129.
W.N.L.A. The, 1165.

Y.

[illegible] 1235.

(Special Explosives and Chemical Works Supplement, April 15th, 1922.)

A.

Ammonia Compressors, XVII.

C.

[illegible] Group of Industries. [illegible] XIV.
Chemicals, Fertilisers, Soap and [illegible] XIII.

D.

Delmore " Group of Industries. The (Illustrated) By S. R. Potter, IX.

E.

[illegible] History of South African Mining. By S. R. Potter, I.
[illegible] Progressive Totals, XVII.

F.

Fertilisers. What South African [illegible] ville, XII.

H.

History of South African Mining Explosives.—By S. R. Potter, I.

M.

Modderfontein Factory (Illustrated) By Owen Letcher, III.

U.

Umbogintwini Factory (Illustrated) By Owen Letcher, VI.

OUTPUTS.

A.

Alluvial Diamonds. Pretoria District (May), 1475.
Alluvial Diamond Returns (May), Western Transvaal, 1474.
Asbestos Outputs, 1116.
Asbestos (Rhodesia), 1207, 1334.

C.

Census. Latest Industrial, 1099.
[illegible] Asbestos, etc. (Rhodesia), 1334.

D.

Diamonds. [illegible] River Diggings (March), 1173.
Diamond Output. Last Year's, 967.
Diamond Output for 1921. The Union's, 913.
Diamonds, Alluvial. Pretoria District (May), 1475.
Diamonds, Alluvial. Western Transvaal (May), 1474.

G.

Glynn's Lydenburg (Output for June), 1513.
Gold Output. Falling World's, 1125.
Gold Output. Group Returns (Jan., Feb., March), 1090.
Gold Output. Group Returns (April), 1229.
Gold Output. Group Returns (May), 1409.
Gold Output. In detail (May), 1402.
Gold Output. Group Returns (June), 1575.
[illegible] 1533.
Gold Output. Group Returns [illegible]
Gold Output in 1921 (Rhodesia), [illegible]
[illegible] 1921 [illegible]

J.

July Output. The, 1663.

M.

Mineral Output of the Union (Jan. to June), 1615.
Mineral Production (Jan), Rhodesian, 911.
Mineral Output (Feb.) Rhodesian, 1093.
Mineral Output (March), Rhodesian, 1207.
Mineral Output (May), Rhodesian, 1489.
Mineral Output (May), Rhodesia, 1605.

R.

Rhodesia's Mines Output in 1921, 990.

S.

South West Diamonds (1920), Ltd., 1531.

T.

Transvaal Silver and Base Metals, Ltd. (February), 1019.

STATISTICS AND FINANCIAL.

B.

Barberton Gold Statistics, 1259.
Base Metal Prices, 1512.

C.

Chartered Company and the Union. The, 1726.

D.

Diamond Industry. The Some Valuable Statistics, 991.

F.

Finance and Information for Investors, 947, 1036, 1073, 1101, 1137, 1170, 1195, 1225, 1267, 1297, 1327, 1353.

G.

Gold Goes. Where Our—(American Ornaments), 1332.
Gold Mines. The Latest from the, 1553.
Gold Returns. The Half Year's, 1633.

I.

Industries Pay Out. What Union, 997.
Imports and Exports for June Union's, 1515.

M.

Mine Purchases in 1921, 1189.
Mines Purchase. What Rhodesian 1725.
Municipal Loan. The New, 1530, 1576.
Mozambique Portland Cement Co. (Debenture Issue), 1231.

O.

Ore Reserves, 1528.

P.

Pilgrim's Rest District. Mining in the, 1644.
Pretoria Silver Lead (Debenture Issue), 1441.
Profits and Costs. Rand (May and June figures compared), 1502.
Profits and Costs. Rand Mining (July and June), 1679.
Provincial Finances, 1249.
Public Works. New, 1544.

R.

Railway Finances and Engineering (Rhodesian) (q), 1142.
Registrations. June Company, 1556.

S.

S.A.R. Financial Position of the, 1002.
Standard Bank. The, 1674.
Statistical Year Book. Official, 967.

T.

Tenders accepted. Important, 967.

U.

Union Finances, 1135.
Union Industries, What they Pay Out, 997.

W.

Where our Gold Goes, 1332.

GENERAL.

A.

Afrikander. Progress at the, 1570.
Air. Drilling and Dustiness of, 1392.
Amsterdam Gold Fields, 1319.
Asbestos. Natal (Outside Districts), 1293.
Asbestos. South African Occurences, 1503.
Asbestos. South Africa's coming Industry, 1115.
Assayers. The South African Association of, 1272.
Assembly. Mining and Industrial Questions in the, 1525.
Associated Scientific and Technical Societies. Aims and Ideals of, 909.

B.

Ballot. The late John, 1188.
Belgian Congo Notes, 1305.
Belgian Railway. The New, 1390.
Benoni's Enterprise, 916.
Bethlehem Oils, 1110.
Boring Through Earth, 1249.
Broken Hill. Accident at, 1332.
Brown Coal. Burning, 1136.
B.S.A. Company. New General Manager of, 1483.
Busy Man's Page, 1003, 1034, 1069, 1133, 1169, 1184, 1231, 1259, 1350, 1396.

C.

Cape to Cairo Line, 1209.
Central Rand. Improving Prospects of the, 1673.
Clack Foundries, 1177.
Coal Grading Bill. The, 1266.
Coal Mining Industry and the Government, 995, 1063.

Coal Mining Industry. Progress of the Natal, 1585.
Coal Mines. Working Hours on Transvaal, 1439.
Coal in the Waterberg District, 1474.
Coal Owners. The Case for the Transvaal, 1395.
Colour Question. The, 1469.
Company Registrations (May), 1411.
Conciliation Boards. The New Industrial, 1715.
Congo Developments, 1335.
Congo Divide Mines, 1583.
Copper Mines. Union's, 1019.
Coronation Syndicate, 1565.
Crisis. The Mine Managers' Views of the, 915.
Crown Diamonds. New Era of Activity, 1677.
Crown Diamond Reconstruction, 1509.
Cutting Steel by Friction, 1041.
Cyanide. The New, 1629.
Cyanide Process. The, 1362.

D.

Delagoa Bay's New Coaling Plant, 1240.
Diamond Diggings. New, 1351.
Diamonds at Parys, 911.
Diamond Revival, 1431.
Diamond Rush. The Latest (Mosesberg), 1389.
Drilling and Dustiness of Air, 1392.
Drill for Deep Level Boring. The Indirect Jet, 1496.
Durban Roodepoort Deep, 1323.

E.

Efficiency and Higher Costs (Mr. Stuart Martin's Evidence, 1295.
Efficiency. Rand Mining Methods Discussed I, 1151.
Efficiency. Rand Mining Methods Discussed II, 1183.
Electricity Supply in South Africa. The Future of, 1321.
Enemy Property. Disposal of, 1037.
Enemy Shareholdings, 1223.
Ex-Enemy Shareholdings, 1362.
Ex-Enemy Shares, 1499.
E.R.P.M. A New Lease of Life for the, 1615.

F.

Falcon Mines. Promising Development, 1528.
Far West Rand Borings, 1266.
Fertilisers. Dr. C. F. Juritz on, 1100.

G.

Geduld. Additional Crushing Plant at the, 1255.
Geduld Ore Reserves, 997.
Geneva Conference, 1100.
Geology. South African. Dr. Molengraff's Views, 1712.
German Menace. The, 1526.
Gold. The Demand for, 1526.
Gold Discoveries in the Rustenburg District, 1645.
Gold Discoveries in Tanganyika Territory, 1626.
Gold Premium. The, 1362.
Gold Refinery. The Rand, 1272.
Gwanda District (Rhodesia), 1177.

H.

Heidelberg Goldfields, 1644.
Heidelberg Reefs, 1259.
Heidelberg Reefs Controversy Revived, 1221.
Here and There, 1027.
Hope Mine Sale (Rhodesian), 1209.
Hydro Electric Activity, 1332.

I.

Indirect Jet Drill for Deep Boring, 1496.
Industrial Statesmanship, 1035.
Insurance Bill. An, 964.
Iron Industry. Future of South African, 1391.
Iron Ore in British Africa. Chief Deposits, 1649.
Iron Ores in Uganda, 939.
Iron and Steel Contract. The, 1006.
Iron and Steel Industry. Bounties for the Basic, 1529.
Iron and Steel Industry. The Birth of a Great, 1555.

K.

Karreefontein Prospects, 1676.
Kasai Diamond Fields, 1729.
Katanga Copper Developments, 1669.
Katanga. Mining Developments in the (Illustrated), 1239.
Katanga Rail Routes, 1305.
Katanga Railway. New, 1485.
Katanga Tin Mines. The, 1336.
Kenya Mining Law, 1035.
Klerksdorp District Activity, 1431.
Klerksdorp. A Premature Boom, 1193.
Killarney. Hibernia. A Rhodesian Mine Flotation, 1605.
Kilo Moto Goldfields (Belgian Congo), 1453.

L.

Labour Control and Ruin, 1240.
"Lame Duck" Mines, 1193.
Legislation. New Mining, 1349.
Lydenburg District Gold Fields, 1473.
Lydenburg. Looking up, 1257.

M.

Maize Elevators, 1436.
Martin's. Mr. Stuart, Evidence, 1295.
Messina Copper, 1587.
Messina. The Position at, 1351.
Metal Prices. The Advance in, 1594.
Metals and their Names, 1122.
Meyer. The late Mr. H. S., 1509.
Mine Purchases in 1921, 1189.
Mines. Five Typical, 1323.
Mine Managers' Views of the Crisis. The, 915.
Mining Development in the Union, 1561.
Mining. Future of South African 1159.
Mining Industry. How to Save the, 1185.
Mining and Industrial Questions in the Assembly, 1525.
Mining Men and Matters, 923, 949, 978, 1008, 1054, 1119, 1205, 1227, 1322, 1367, 1388, 1431, 1464, 1479, 1541, 1594, 1639.
Modder B. The Improving Prospects of, 1495.
Modder Deeps and Geduld Ore Reserves, 997.
Modderfontein East, 1323.
Mosesberg Diamond Rush, 1389.
Motor Liners. British, 1288.
Mozambique Portland Cement Co., 1231.
Mozambique Prospecting, 1706.
Mulingwane Minerals, 1177.

N.

Natal Asbestos, 1293.
Native Efficiency and What it Means. Increased, 1501.
Native Mine Labour, 1392.
New State Areas. The Proposed New Mine, 1287
Notes and News, 920, 91[illegible], 972, 1033, 1071, 1096, 1131, 1166, 1200, 1237, 1272, 1302, 1331, 1358, 1408, 1445, 1506, 1538, 1569, 1601, 1624, 1654, 1688, 1720.
Nourse Mines, 1324.

O.

Officials' Views. Underground, 1563.
Oil Field? A Probable New, 1249
Oil. Our Improving Prospects of Finding, 1429.
Oil Shale Flotation. A New, 1475.
Ore Reserves. Modder Deep and Geduld, 997.

P

Parys Diamond Diggings, 1159
Pilgrims and Sabie, 1193.
Prime Minister's Appeal, 997.

R.

Railway Conference. The, 1209.
Railways. New, 1396.
Railway Programme. The New, 1453.
Railway Traffic (Rhodesian), 1605.
Rand Co-operative Smelting Works, 1029.
Randfontein Revival. The Great, 1643.
Rand. Improving Prospects of the Central, 1673.
Rand Mining. The Improved Economic Position of, 1469.
Rand Mining Methods Discussed, 1151, 1183.
Rand Mutual Assurance Company's Prizes, 1433.
Rand. Rejuvenation of the, 989.
Rand Water Board and the General Strike, 1141.
Red Revolution. The, 961.
Refinery. The Design and Lay Out of the Rand Gold, 1557.
Research and Discovery on Rand Mines, 1247.
Research Work of U.S. Bureau of Mines, 1651.
Reserve Bank. The S.A., 1294.
Reviews, 994, 1712.
Rhodesian Mining Developments, 1696.
Rhodesia. The Mineral Industry of Southern, 1403.
Rhodesian Railway Finances and Engineering, 1142.
Rhodesian Railways and the Union, 1619.
Rhodesia's Railway Rates and the Mines, 1696.
Roodepoort Amalgamation. A Projected, 1593.
Roodepoort United Fire, 1194.
Roof Tiles Cheap, 1135.
Rogers. The late Major H. A., 1433.
Rustenburg District. Gold Discoveries in, 1645

S.

Sabiwa Mine (Rhodesia), 1725.
South African Association of Assayers, 1272.
South African Mining and Engineering Journal Annual, 1922, 1130.
S.A.R. Tenders, 1388.
S.A.R. Trade and the, 1123.
South African Reserve Bank, 1294.
Shop and Shaft Stewards on the Mines, 1527.
Steel Discovery. "Temper Brittleness." [illegible] 1044, 1091.
Steel Cutting by Friction, 1044.
Strike Developments on Rand: This week's, 937.
South-West Africa's Minerals and Transport, 1393.

T.

Tanganyika Territory. Gold Discoveries in, 1626
"T.C.L." Capital, 916.
Trans-Zambesia Railway. The 1359.
Transvaal Coal Owners. Case for the, 1395.

U.

Uganda. Iron Ores in, 939.
Underground Officials' Views, 1563.
Union-Mozambique Negotiations Fail, 1484
Union Petroleum Company, 1192.
U.S. Bureau of Mines. Research Work of, 1651.

V.

Vaal River Diamonds, 1447.
Village Deep, 1324.

W.

West End Diamonds, 1351.
West Rand Consolidated Reconstruction, 1435.
West Springs. The Outlook for, 1497.
Working Costs and the Life of the Rand, 1589.

Z.

Zelia Disappointment, 1316.
Zelia Property (Rhodesia), 1207.
Zoutpansberg, 1194.

ILLUSTRATIONS AND MAPS.

A.

African Asbestos Mining Co., Nil Desperandum Mine, 1583.
Amsterdam Gold Fields. Geological Section, 1319.
Anderson. P. M. Vice President of the Chamber, 1015.
Asbestos Mines. Scenes on the, 1113.
Asbestos Mine. A Working Face at a Northern Transvaal, 1116.
Aurora West. General View of, 1671.

B.

Banties Consolidated. The In Liquidation, 1217.
Barnato State Mining Enterprises. Two Great, 1385.
Barricades on the Mines to defend Police, 937.
Belgian Congo Railway Project. Bukama to Ilebo. Map of, 1337.
Beira, Mashonaland and Rhodesia Railways. Map of, 1619.
Booysens Estate Area. Map of, 1464.
Broken Hill Mine Workings (Rhodesia), 1523.
Broken Hill Smelting Plant, 1611.
B.S.A. Explosives Co., Modderfontein, 1083.
Buffalo Collieries. Views of the, 1586.

C.

[illegible] A. [illegible] 1141.
[illegible] 1475.
[illegible] 1571.
[illegible] 1377.
[illegible] 1127.
[illegible] 995, [illegible].
[illegible] 1591.
[illegible] 1437.
[illegible] 1087.
[illegible] Map of the [illegible] 1471.
[illegible] 1105.
[illegible] 1439, 1707.
[illegible] 1444.
[illegible] 1677.
[illegible] Diamond Mine. View of, 1717.
[illegible] Diamond Mine. Washing Plant, 1196.

D.

Daggafontein. Magnetic Plan of, 1705.
Deep Mining [illegible] 1051.
Delmore. Views of (Supplement to April 15th), IX, XI.
Diamond Diggers Camp, Six Miles East of Parys, 1159.
Diamond Mine. A South African, 991.
Diamond Mines of South West Africa. Map of the Consolidated, 1471.
Diamond Rush. Scenes at the Great Mosesberg, 1390.
Diggings. Renewed Activity on the River, 1551.
D.E.I. Scene of the, 990.
Durban. Landing Wharf at the Bluff, 995, 997.

E.

East Rand. A Scene on the, 1184.
Elizabethville. Palace of Justice, 1336.
[illegible] Collieries. View of the, 1586.
Enyati Colliery. Screening and Loading Plant, 1713.
E.R.P.M. Shaft with its complement of [illegible] 1615.

F.

Flow Sheet. Diagram New State Plant, 1089.
Fordsburg. The Battle of. Arrest of [illegible] 961.
Fordsburg. The Battle of. A Rebel being searched after capture, 962.
Fordsburg. The Battle of. (Showing Residents [illegible] before bombarding started), 963.
Fordsburg. The Battle of. [illegible] 964.

G.

Gatooma Mining District, Rhodesia. Some Views in the, 1181.
Geduld. No. 7 Shaft, [illegible].
[illegible] Power Station, 991.
German East Africa. [illegible] 1103.
[illegible] 1645.
Gold Mining in North [illegible] 1219.
[illegible] Power, 1121.

H.

[illegible] 1703.
Harris, Sir David, 1562.
[illegible] 1681.
[illegible] View of, 1644.
[illegible] Coalfield of the Further Far East Rand, 1222.
Hertzog, General, 1057.
Hill, Mr. H. R., Outgoing President, 915.

I.

Iron Ore Deposits on Pretoria Town Lands. Opening up, 1617.
Iron and Steel Industry looks like. What a, 1555.

K.

K[illegible]. The Essential, 1317.
Katanga Copper Belt. Open Workings on, 1336.
Katanga Railways. A Bridge on the, 1335.
Katanga. Steam Shovel at work in, 1305.
Kettlefontein corner near Pietermaritzburg, 1263.
Kirkland, J. W., President of the South African Institution of Engineers, 1427.
Kolmanskop. View of Central Plant at, 1431.
Kotze, Sir Robert, Government Mining Engineer, 1057.
Kynochs. Views of Umbogintwini Factory (Supplement, April 15th.), VI.

L.

Langlaagte Deep Section, Crown Mines. Shaft at, 1149.
La Panda (Congo). Map of, 1337.
Lydenburg District. Open Working in the, 1473.

M.

Malan, The Hon. F. S., Minister of Mines and Industries, 1055.
Messina Copper Mine. The Approach to the, 1587.
Metallurgical Equipment. Present Day Rand, 1691.
Metal Prices since January 1st. Variations in, 1594.
Meyer, E. C. J., Manager East Rand Proprietary Mines, 987.
Mint. The Pretoria, 1345.
Modder B. View of the Surface Plant, 1495.
Modder Deep Mine, 1025.
Modderfontein Explosives Factory. Scene in Danger Area, 1083.
Mosesberg Diamond Rush. Scenes of, 1389, 1390.
Municipal Sub-Station, New Johannesburg, 1627.
Murchison Range District. Map of, [illegible].

N.

Native Mine Boys. A Group of Typical, 1501.
Newcastle Iron and Steel Works, 1556.
New Kleinfontein G. M. Co., 1290.
New State Areas. The North Shaft of the, 1053.
New State Areas Plant. Flow Sheet, 1089.
New State Mine. Ore Receiving Bins. Preparing the, 128[illegible].
New Transvaal Chemical Works. Delmore. Views of (Supplement to April 15th), IX, XI.
New State Mine. Preparing Excavation for the Ore Receiving Bins at, 1287.
New State Mine. Winder at, 1285.
Nil Desperandum Asbestos Mine, Shabani, Rhodesia, 1115.
Nil Desperandum Mine of the African Asbestos Mining Co., 158[illegible].
Northern Natal Navigation Col. [illegible] at Dunn's, 1586.
Nourse Mines, 1437.
Nourse Mines. The old West Shaft, 1388.

O.

Old Views of Drill at Work Finding, 1429.
Ore Receiving Bins at the New State Mine. Excavation for the, 1287.

P.

Palace of Justice, Elisabethville, 1336.
Panda-Katanga. The Great Concentrating Plant at, 1523.
Pilgrim's Rest Gold Fields. Scenes from the, 1253.
Power Plant. The Johannesburg Municipal, 965.
Power Sub-Station. New Johannesburg Municipal, 965.
Power Station. The Johannesburg Municipal, 907, 1321.
Premier Diamond Mine "Carries On," 935.
Pretoria Iron and Steel Works, 1556.
Pretoria Mint, 1345.
Prominent Men in the British Coal Industry, 1056.

R.

Railway Developments in the Congo. Map of, 1337.
Railway Map of Rhodesia. Latest, 1619.
Rand Refinery. The, 1557.
Rand. A Scene on the. The Stacks are Smoking again, 989.
Randfontein. Four New Views of, 1643.
Randfontein Headgear, No. 2 Shaft Battery Reef, 1351.
Randfontein Mill. The Great, 1502.
Refinery. The Rand, 1557.
Revolution on the Rand. Red, 959.
Rhodesia. Latest Railway Map of, 1619.
Rhodesian Mining. Some of the Leaders of, 1043.
River Diggings. Renewed Activity on the, 1551.
Rhodesia. Some of the Leaders of Commerce and Industry, 1647.
Robinson Deep, 1674.
Robinson Deep. Mill and Boiler House, 1463.
Roper, The late Major H. A., 1433.
Roodepoort Area. A Map of the, 1593.

S.

Scientific and Technical Societies. Home of the Associated, 909.
[illegible] Gold Mine, Mashonaland. The Great, 1586.
[illegible] Mine. The View of Reduction Works, 1545.
[illegible] Concrete Tanks. Excavations for the, 1286.
Southern Van Ryn. Erecting a Headgear, 1221.
Stamp Battery in the Early Days of the Rand, 1151.
South West Protectorate. Map of the Diamondiferous Areas, 1471.
Stock Exchange 25 Years Ago, 1493.
Stopes. In the Field of Wide Undergrounds, 1163.
Stope Lay Out for Flat Reefs. A New Standard, 1017.
Stores go underground in a Rand Mine. Where the, 1183.

T.

Theta Reef Horizon. East Clewer Mine, 1257.
Timber for Rand Mines, 1077.
Transvaal Silvers. Reduction Plant, 1676.

U.

Umbogintwini. Views of Chemical Works, April 15th (Supplement), VI.
Union Petroleum Company. Views of Drill at work on, 1429.
Union Steel Works at Vereeniging, 1529, 1707.

V.

Vaal River Barrage. Another View of the, 1573.
Vaal River Barrage. Goliath Crane and Gate, 1571.
V.F.P. Power Standard on the Reef. Typical, 1059.
Village Deep, 1673.
Volcanoes that border the Great Rift Valley of Central Africa, 1657.
Vryheid Colliery. Waiting for Trucks at a, 1289.
Vryheid (Natal) Colliery. The, 1585.

W.

Wankie. By-Product Plant at, 1086.
Wankie Coal Mines. The Great, 1611.
Wankie Colliery, Matabeleland. The Great, 1275.
Watermeyer, Professor G. A., President of C.M. and Mining Society, 1461.
West Rand Consolidated. View of Surface Plant, 1435.
West Rand. Small Mines on the, 1641.
West Springs Development. Latest Plan of, 1613.
West Springs. The Latest Photos, 1291, 1497.
Winder at South Shaft, New State Mines. Installing a new, 1285.
Witwatersrand University. The Main Building of New, [illegible].

Z.

Zululand Harbour. New Map of, 1559.

CONTRIBUTED AND SPECIAL ARTICLES.

A.

Amsterdam Gold Fields, 1319.
Asbestos, Natal, 1293.

C.

Caving Systems of Mining II. By J. Parke Channing, Vice President Miami Copper Co., 966.
Chromite for the Manufacture of Ferro-Chrome. By J. A. Holden, 1420.
Coal Trade. The Union's Prime Minister on "Outlets," 1289.
Cyanide Process, The I. By Alfred James, 1664.
Cyanide Process, The II. By Alfred James, 1692.
Cyanide Process, The III. By Alfred James, 1730.

D.

Daggafontein Dormant Mines of the Rand, 1705.
Distillation Experiments with South African Coal.—By T. G. Trevor, Inspector of Mines, Pretoria, 1628.
Dormant Mines of the Rand I: The Van Dyk, 1675.
Dormant Mines of the Rand II: Daggafontein, 1705.

G.

Gold Mining. The Gamble of, 1219.
Gold. A New Method of Treating Surface Residues for. By a Special Correspondent, 1065.

H.

Heidelberg District. Upper Witwatersrand Beds in the—By A. W. Rogers, Sc.D., F.R.S., F.G.S., 1683.

I.

Iron Industry. Pretoria as the Site of a National—By Percy A. Wagner and G. H. Stanley, 1617.
Iridium in Southern Africa.—By a Correspondent, 1191.

K.

Katanga Mining Developments in the, 1239.

L.

Lake Albert Valley and its bearing on South African Rifts. By E. J. Wayland, 1657.
Lydenburg District Gold Fields. By W. H. Jones, 1473.

M.

Metallurgy. Recent Advances in Rand. By a Special Correspondent, 1691.
Mineral Developments up North, 1085.
Mineral Industry of Rhodesia. The —By our Special Commissioner in Rhodesia, 1577.
Mines. Research and Discovery on Rand, 1347.
Mine Supplies. The South African Market for—By the F.B.I. Special Commissioner, 1711.
Mining Methods Discussed. Rand, I., 1151.
Mining Methods Discussed. Rand, II., 1183.
Murchison Range Goldfield. The, 1465.
Mwanga Gold Fields, Tanganyika.—By H. Rose Martin, A.I.M.M., 1708.

N.

Natal Asbestos, 1293.
Natal Coal Fields. Notes from the— From our Special Commissioner, 1713.
Natal Colliery Notes. By our Special Commissioner, 1630.
New State Areas Plant, The 1053.

O.

Oil Shale Industry of South Africa. The Coming. By F. W. Girdler Brown, M.Inst., M.M., etc., 1466.
Osmiridium. The Truth about Rand, 1387.

P.

Parliament and the Mining Industry, 1055.

R.

Rand Mining Methods Discussed, 1151, 1183.
Rand. Rejuvenation of the Position at Various Mines, 989.
Revolution. The Red, 961.
Rhodesia, Broken Hill. Engineering and Metallurgical. Methods at. By our Special Commissioner, 1708.
Rhodesia. The Mineral Industry of, 1577.
Rift Valley. The Geology of the Great African, 1657.

S.

Sabie Area. The From a Special Correspondent, 1157.
Shamva. The present position of the. By a Special Correspondent, 1545.
"Small Man" and the Land Owner. The- By J. Everard Anderson, M.I.M.E., 1531.
"Small" Mines Activity. West Rand, 1647.
Stope Lay-out for Flat Reefs. A New Standard—By R. E. Sawyer, A.R.S.M., 1017.
Strike and the Revolution. The —Extract from a letter, 993.

U.

Uganda. The Mineral Resources of. By Messrs. E. Wayland and W. C. Simmons, 999.

V.

Van Dyk. The—Dormant Mines of the Rand I., 1675.
V.F.P. and the Recent Industrial Crisis, 1059.

W.

Waste in Mining, 1508.
Waste Rock in Ore Milled.—By W. A. Caldecott, D.Sc., 1513.
West Rand Small Mines Activity, 1647.
Witwatersrand Beds in the Heidelberg District Upper.—By A. W. Rogers, Sc.D., F.R.S., F.G.S., 1683.

"Service and Citizenship:" Engineers to the Rescue!

The South African
Mining & Engineering Journal
THE ONLY WEEKLY MINING PAPER IN THE CONTINENT OF AFRICA.
Established 1891.

Vol. XXXII., Part II JOHANNESBURG, TRANSVAAL, SATURDAY, MARCH 4, 1922. No. 1588.

The Centre of the Week's Excitement!

The Johannesburg Municipal Power Station, shown above, again came into the limelight this week, owing to a Strike of the men employed at it. The Strike was ascribed to the use of Witbank or so-called "scab" coal by the Municipality. The Police took charge of the Station after the Strike, and it is now being run under their protection by volunteers and members of the Associated Scientific and Technical Societies.

SIEMENS BROTHERS

& CO., LIMITED

CABLES and WIRES

TELEGRAPHS

LINE MATERIALS

CABLE ACCESSORIES

TELEPHONES
MANUAL and AUTOMATIC.

FLUID CELLS

EBONITE

SIGNALLING APPARATUS

DRY CELLS

Representatives in South Africa:

A. J. G. SIMPSON, A.M.I.E.E.
African Life Buildings, 85, St. George's St.,
CAPE TOWN.
P.O. Box 239, Cape Town. Telephone 1202 Central.

G. H. B. BERNARD, A.M.I.E.E.
9-10, Cotts Buildings, Rissik and Fox Sts.,
JOHANNESBURG.
P. O. Box 7404, Johannesburg. Telephone 408 Central.

Telegrams : "SIEMENS."

The Aims and Ideals of the Associated Scientific and Technical Societies.

PRESIDENTIAL ADDRESS BY DR. ORENSTEIN ON SERVICE AND CITIZENSHIP.

The Presidential Address delivered before the Associated Scientific and Technical Societies of South Africa, on 24th. February, 1922, by Dr. A. J. Orenstein, C.M.G., M.D., M.R.C.S., L.R.C.P., was as follows:- You have had placed before you the Financial Report of our Association as well as the Report of the Controlling Executive which recounts the activities of our Association in the past year. I do not propose to take up your time by dealing with these in detail. I would rather speak to you for a few minutes about our aims and ideals, as I visualise them.

An American Example.

Towards the end of 1919, an effort was made in America to establish a National Interprofessional Union. The idea seems to have been received with delight in all quarters, but the result appeared to have been rather less brilliant than was anticipated. There was brought about a federation of certain engineering and allied professional associations. Even this, however, was hailed as "the greatest achievement of modern times" by the American technical press.

The Movement in South Africa.

About the same time here in little South Africa, due mainly to the vision, genius and persistence of our first president and honoured Honorary Member, Mr. Percy Cazalet, and the assistance given by the Chamber of Mines, we have achieved what the powerful and rich Associations in the United States failed to achieve—union of all the leading professional and technical associations in the country. We did it without much noise, indeed so quietly that many people even in this country, indeed many of our professional confreres do not as yet realise that we have made a great step forward, that we have laid the foundation stone and are well away on the erection of an edifice which we hope will be not only a shelter to us all, but a source of strength to the country and a true temple of the goddess of science, whose other name is Truth. I feel that we have builded better than even we knew.

The Place of the "Brainworker."

We who are the inheritors of ages of slowly accumulated knowledge, perhaps because we are constantly made conscious of the changes in knowledge, the ebb and flow which takes place in it—because knowledge is alive and immortal, perhaps because we have had constantly dinned into our ears the important place due to labour, and that capital is the basis of prosperity and development, perhaps because we have had this reiterated to us so many times that we have fallen victims to suggestion and do not even stop to assure ourselves that these formulae contain the whole of the factors, are apt to depreciate ourselves, indeed are doing this. I am afraid the bulk of people think that there is no place of any importance in the workaday world for the man of science, the "brainworker." We are told we are "impractical men" who must work away at our professions, and leave the management of the world to the "practical man." Has this stupid conception affected even us? Is this the cause of our being content to sit still in our offices, and laboratories, and meeting rooms, working away at the problems of our particular branches of science, and leaving the big issues, the burning problems of the mass of humanity that surrounds us, to anyone who cares to play with them, no matter how ill-fitted for the task? Nay, to our shame it must be said, that many of us even think that it is below our dignity to mingle in these things, we glibly say: "Dirty politics—leave them to the politicians," and we say "politicians" all in italics. I trust that one of the achievements of the Associated Scientific and Technical Society will be that we shall learn to think otherwise in this matter," that we shall recognise that we as servants of science are also servants of the Commonwealth, and that we owe it to the Commonwealth, that we indeed owe it to ourselves to take an active, part in community life, a part for which we are indeed well fitted. "Leave it to the politicians!" Well, look at science and scientific workers and general progress in Russia! If the Associated Scientific and Technical Societies achieve only this one thing, if it brings home to us the need for taking an active part in communal life, our work shall not have been in vain and we shall deserve well of our country, indeed of the whole world.

Need for Thought.

As scientifically trained men we are taught to think, but I venture to suggest to you that it does not so much matter what we think, as what we *think out*—what we decide. Let us *think out*, each one for himself, whether we are right in continuing our tacitly agreed upon "policy of isolation."

The Home of the Associated Scientific and Technical Societies.

Big problems are facing the world. The strike here, even though it looks so big to us, is, by comparison with these bigger problems, only a very small disturbance in a very small tea-kettle indeed.

The world has just finished destroying on an unprecedented scale not only its accumulated wealth, but has pledged the wealth of generations yet unborn. In a mad whirl of passion it has destroyed in five years what has taken generations to build up, and will take many generations to restore. And, more than that, the whirlpool of seething passions has left as it receded bitterness and distrust in millions of minds; has upset the mental equilibrium of thousands who, although prior to the catastrophe capable of sound and logical reasoning, are now content to repeat parrot-like many silly phrases. Perhaps the [illegible] "National independence" for South Africa, [illegible] "a White South Africa," [illegible] "as a flood tide."

Industrial Relations.

There is pressing upon us the great problem of industrial relations, complicated, and to a great extent restated in new forms, by the economic and psychic effects of the Great War. In regard to this problem, I can do no better than to quote to you from an address delivered in New York on November 16th last by Mr. B. Seebohm Rowntree, of York, England:—

"... If a steel merchant is receiving ores from different parts of the country, I imagine he will find that there are certain differences in these ores and that, in order to obtain a steel of a certain quality each variety of ore must be treated rather differently. If he wishes to manufacture a certain standard of steel, he finds that he has to make sometimes radical, sometimes slight, changes in the way in which he treats different kinds of ore in order to obtain the desired result. If he gets a new kind of ore, or if a shipment of ore does not give him the reaction that he wants, he does not get in a temper with it, he does not say: 'What stupid ore this is.' He recognises that it is up to him and not up to the ore so to alter and adapt his methods as to obtain the reaction that he desires. He never talks about ore 'in the mass'; he talks about ore from this mine, from that mine, and the other mine. His treatment is entirely scientific. But you will find that man talking about labour in the mass, attempting, for instance, to treat his Lithuanian, his German, his Pole, his Italian, his American all in the same way. And yet he expects to get a satisfactory reaction. That is quite unscientific. We employers are really a very unimaginative lot of people; we have very little vision.

"We have got to tackle this problem of industrial unrest in a thoroughly calm, scientific spirit, recognising that we are entering upon a world with a psychology different from that which existed in 1913. Men everywhere are demanding better conditions, and it is up to us to see whether we can grant them. Therefore, let us approach the problem of how to get rid of industrial unrest by a quiet examination of the causes which give rise to it and let us get rid of all preconceived notions; let us try to enter upon that examination just as a chemist would enter upon the solution of some difficult chemical problem, willing [illegible] first of all to diagnose the problem and, second, to make a report upon it, purely in accordance with the facts as they were found, without any prejudice.

"I believe that the right action for us employers is to examine the existing conditions of industry on the assumption that industry continues on its present basis. A number of people are so dissatisfied with conditions in industry as they exist to-day that they are devoting the whole of their efforts to attempts to alter the system of industry—to replace the capitalist system by some other. I do not think that the capitalist system of industry has ever had a really fair trial; the capitalist has always abused it. It [illegible] the possibility of far better industrial conditions than have yet been obtained. The following statement of what, I think, may be regarded as the aims of industry has been written on the minutes of a board of directors in capitalistic industry in England, a board that is definitely trying to work toward the achievement of those aims.

> "1. Industry should produce goods or provide services of such kinds and in such measure as may be beneficial to the community.
>
> "2. In the process of wealth production, industry should pay the greatest possible regard to the general welfare of the community, and pursue no policy detrimental to it.
>
> "3. Industry should distribute the wealth produced in such a manner as will best serve the highest ends of the community."

To achieve this, and yet be able to compete in the open market with the rapidly developing industries in countries where wages are low, will require the best talents, the best knowledge and the best efforts of the technically trained men in countries where the standards of living are high and time-labour costs consequently also high. The problem is to convert high time-labour costs into low unit-labour costs, and that can be done only by standardised high-output machinery and high labour efficiency. Here it is that capital and labour if left without really competent technical help and guidance would fail utterly. It is *the* problem for the engineers, the chemists, the architects—yes, even the doctors can help in its solution—working together wholeheartedly and inspired by a much higher ideal than scientific achievement or national patriotism—the ideal of service to mankind. It is a great task, a grave responsibility, but one which we welcome and of which we are proud.

Danger of "Potterism."

If we are to serve worthily, if we are to accomplish well and truly this great task which is set before us, we must especially beware of two things. We must beware of the fads of pseudo-science, the painted woman who beckons to us from the byways and obscure alleys, and we must beware of muddle-headed thinking, what a brilliant writer, Rose Macaulay, dubbed "Potterism." As examples of pseudo-science, I would instance one or two examples from my own profession. The profession of medicine, being in the transition state from empiricism to science, offers a particularly fruitful field for such examples as I require for my present purpose, but were I equally familiar with other professions, I doubt not I could find good specimens in those as well. One example, familiar to all of you, is the widespread and indiscriminate use of vaccines, especially commercial vaccines, made in bulk at a factory. For several reasons, the immunity reaction of no two individuals is quite alike, that is a proved fact, yet my colleagues, with a blind faith that passeth understanding, buy and inject such vaccines wholesale; as a wise man once said: "Pouring into a body of which we know little, drugs of which we know less." Witness the inoculation craze of the last influenza epidemic! And in spite of the fact that everyone who reads thoughtfully now knows that the "Influenza Vaccines" did no good, I warrant that were we to have another wave of influenza, gallons of this stuff would again be injected, to the profit of the manufacturers, who, I should not wonder, laugh in their sleeves. Another example is the craze, recently made unpleasantly notorious, for tooth extraction. That there are many cases in which badly neglected teeth cause systemic disturbances of a serious nature, is an established fact. That teeth are often damaged beyond redemption and must be removed is also unfortunately a fact. That there is no scientifically established reason for removing the teeth of many of the people who have had this operation performed on them is unhappily also a fact. Simply because an unfortunate individual has indigestion, or headaches, or what not, and also has bad teeth, does not of course by any means establish that the teeth are the cause of the trouble. These two instances are typical of the pseudo-scientific mind and habit, the tendency to apply to individual problems generalisations from related but not of necessity identical experiences.

Some "Potterisms."

Of "Potterisms" there are many examples in everyday practice taught and uttered. Who has not read *ad nauseam*, the amateur economist's views on the financial problems of the world—"The Currency Question" he usually calls it? An analysis of his mentality is simple, up to a point: He starts out with a fact or two; for instance, the desirability of a stable international exchange medium, and that the Witwatersrand is the largest producing area of such a medium. Having these facts fixed in his mind, and blissfully ignoring all the other factors of the problem, he jumps to some panacea, waxes eloquent, verbose and enthusiastic, and honestly wonders why everybody doesn't acclaim him a financial genius and the saviour of mankind. It is as if a man called upon to work out the problem of $\frac{15 \times 8}{12} \times 6$ ignored the last two factors and stuck to the answer being 120. Another, and more dangerous, member of the "Potter" family is the gentleman who entrenched in class, political or economic prejudices, his mind a wondrous junkshop of half-digested and undigested economic and political catchwords and Shibboleths, shuts his ears, and his eyes, and his mind to whatever facts may be pressing upon them, and reiterates his little formulae, whether it be "My Country, right or wrong, my Country," "Imperial Policy," "The Sacred Right of Property," "Our Ancient Liberties," or "The Right of Self-Determination," "The Product of their Work belongs to the Workers," "Democratic Control," "Class Consciousness," "The Solidarity of the International Proletariat," "A White South Africa," etc. Different formulae all of them, but all of the same genus—the genus "Potterism." It is our sacred duty to humanity not only to avoid such empty phrases, but to teach others to regard them as things to be ashamed of; to show them clearly in their nakedness for what they are: The external signs of minds incapable of viewing more than one or two facts of a problem at a time.

Every thoughtful man sympathises with the struggle of his fellowmen for a better world, for more of the amenities of life, for more leisure, better housing, better food, a higher intellectual level. The more one sympathises with these aspirations, the more painful is the reading of the speeches of many "labour leaders." We have read a lot of local specimens recently, but they are only prototypes of such speeches made elsewhere in the world: Facts ill-digested or perverted in presentation, no substance, no concrete solution, just glittering generalities based on wrong or incomplete premises. The other side: The old-fashioned parsons, the ultra-conservative press and ultra-conservative "political leaders"—the same thing—pitiable, silly verbiage.

A Dream of the Future.

I am coming to the close of my remarks. I dream of a day when the trained minds of the world will stand united to think clearly, speak the truth frankly, and to do their work in the world honestly, and with the one dominant ideal—Service to Mankind. I believe that we here, a small community in a small and young but vigorous country, have started on the march to that goal. I believe that we here realise our responsibility: To us much has been given by our scientific predecessors in every clime and country. That we may start where they left off, they have suffered much, sacrificed much, they despaired and they hoped. Much has been given to us—much is demanded from us. I hope we shall not disappoint the world's expectations, and also not disappoint ourselves.

The establishing of the Associated Scientific and Technical Societies of South Africa is to my mind a pledge that we realise that it is not sufficient to be an adept in one's own craft, that one must also be a citizen of the world. I trust that this building will be the centre from which will radiate the ideals of clear thinking, calm judgment, helpful idealism, constructive evolutionary reform, clear conception of duty to mankind, all those thoughts and activities which distinguish thoughtful men from the impressionable and ignorant mob.. It is because of this that I confidently anticipate support for our endeavours from all enlightened people. "Always something new comes from Africa." I sincerely believe that the Associated Scientific and Technical Societies of South Africa will be yet another justification of the truth of this ancient adage.

RHODESIAN MINERAL PRODUCTION FOR JANUARY.

		Value.
Gold (fine ounces)	53,540·85	£240,055*
Silver (fine ounces)	13,696·43	1,411
Coal (raised 49,830 tons)	(sales)	15,075
Coal used for coke		6,489
Copper (blister) (tons)	286·11	17,167
Chrome ore (tons)	1,463·63	2,427
Asbestos (tons)	557·67	12,879
Arsenic (tons)	41·40	1,003
Mica	3 tons 1,766 lbs.	979
Diamonds (carats)	12·125	54
Total		£297,539

* Includes £13,956 gold premiums.

DIAMONDS AT PARYS.

With reference to the discoveries of diamonds at Parys (O.F.S.), the local correspondent of *The Friend* writes that in an interview a gentleman representing a diamond syndicate at Kimberley, who visited the spot, stated that a few of the lower river diggers did not credit that the finds were as good as *The Friend* reported, and he had been sent by a Kimberley syndicate to investigate and act if necessary. He went to Waarom and was so impressed that he bought an owner's crop of mealies in order to obtain the right to prospect the lands. He came back to Parys and found that about £1,400 worth of stones had been taken out in six weeks' prospecting, and the whole value of the work done was estimated by him at less than £200. He considered that the value of the discovery had been under-estimated in the reports of *The Friend*, and expressed the opinion that if there was a continuity of the deposit there would be many thousand diggers here in a few months. The dealer who bought the 46 carat stone for £640 sold it for £1,100.

Mine Surveyors' Examination.

It is notified that the Commission of Examiners for Mine Surveyors' Certificates of Competency will hold the next examination on Wednesday, Thursday, and Friday, the 15th, 16th, and 17th March, 1922, at 9 a.m., at the University College, Eloff Street, Johannesburg, and also at Dundee, Kimberley, and Bloemfontein if there are sufficient applicants. The prescribed form of application for examination is obtainable, without payment, by applying to the Secretary to the Commissions of Examiners, P.O. Box 1132, Johannesburg. Those wishing to enter for the examination must send in their applications (stating at which centre they wish to be examined), to reach the Secretary on or before the 1st March, 1922. The following syllabus of examination, and a detailed copy thereof will be supplied on application to the Secretary. Candidates will be examined in the following subjects:—(1) Surveying; (2) Algebra, geometry, and plane trigonometry; (3) Geology; (4) Mine valuation; (5) Legal knowledge. The candidates shall be required to hand in on the first day of the examination a specimen plan accompanied by an affidavit stating that he has executed the plan himself. The above examination may be followed by a trial survey.

RYLANDS' STEEL WIRE ROPES

MANUFACTURED BY:

RYLANDS BROTHERS, LTD.,

WARRINGTON, ENGLAND.

SOLE REPRESENTATIVES FOR UNION OF SOUTH AFRICA:—

ARMSTRONGS & MAIN, LTD.,

84, Marshall Street,

JOHANNESBURG.

P.O. BOX 5988. **'PHONE 5203.**

LARGE STOCKS ON HAND.

SPECIALISTS ..

IN THE MANUFACTURE AND DESIGN OF

STRUCTURAL STEELWORK.

ARMSTRONGS & MAIN, LTD.,

GENERAL AND CONSTRUCTIONAL

.. ENGINEERS, ..

84, Marshall Street,
JOHANNESBURG.

P.O. BOX 5988. **TELEPHONE 5203.**

The Union's Diamond Output For 1921.

DETAILS OF PRODUCTION BY DISTRICT—DROP OF OVER £8.000.000 IN VALUE—AVERAGE REALISED PRICE PER CARAT FALLS FROM 117/- TO 81/7.

The official returns of the diamond output for 1921, issued by the Mines Department, shows the following:—

	Total production		Total sales.	
		Estimated		
	Carats.	Value.	Carats.	Value.
Witwatersrand ..	141·75	£198	141·75	£198
Pretoria	358,505·05	852,949	117,492·53	291,972
Klerksdorp ...	65,839·75	401,004	65,839·75	401,004
Transvaal ...	424,486·55	1,254,151	183,474·03	693,174
Value realised per carat, 75s. 7d.				
Kimberley	179,752·25	908,211	193,541·00	800,519
Barkly West	53,725·25	366,347	55,322·50	366,795
Taungs	1,736·50	10,682	1,736·50	10,682
Herbert	2,374·00	17,158	2,374·00	17,158
Kuruman	235·75	898	148·75	850
Hay	646·25	1,925	1,049·25	2,083
Cape	238,470·00	1,305,221	254,472·00	1,198,087
Value realised per carat, 94s. 2d.				
Fauresmith	107,993·75	£471,178	44,101·00	£175,201
Boshof	20,676·25	39,079	29,086·00	56,557
Kroonstad	10,236·59	13,464	13,805·59	20,205
Winburg	3,893·37	12,173	4,104·75	12,670
Rouxville	804·00	7,409	979·50	5,124
Vredefort	63·63	657	64·63	[illegible]
Hoopstad	17·00	100	17·00	100
Wepener	1·94	15	1·94	15
Bloemfontein	0·25	1	0·25	1
O.F.S.	143,686·78	544,076	92,160·66	270,535
Value realised per carat, 58s. 9d.				
Union of S.A., Year 1921..	806,643·33	3,103,448	530,106·69	2,161,796
Value realised per carat, 81s. 7d.				

Modder East's Outlook.

LIFE SERIOUSLY THREATENED.

In the course of his report for the three months ended December 31 last on the Modder East, Mr. J. H. Twiddy, the Government Inspector of Mining Leases, writes:—The payable percentage of the footage sampled decreased slightly from 52·4 per cent. to 50·5 per cent., but the average value increased from 326 inch dwt. to 375 inch dwt. An increase both in percentage payable and value has taken place at the No. 1 Shaft and a decrease at the No. 2 Shaft, whilst at the No. 3 Shaft the value has increased, the payable percentage remaining about the same as for the last quarter. Compared with the previous quarter there has been a decrease of 9,923 tons in the tonnage mined and a decrease of 0·33 dwt. in the average value.

Over Mining.

The average value and width of ore mined from the payable reserves according to data adopted in the estimation reserves as at the 30th June, 1921, was 10·51 dwt. over 56·77 inches, whilst the payable reserves as a whole at that date averaged 7·7 dwt. over 56·7 inches. Overmining has, therefore, taken place to the extent of 160 inch dwt., or 2·8 dwt. over the stoping width. The average face sampling value of the ore stoped in the payable reserves agrees closely with the estimated value of the corresponding blocks after making the necessary adjustment for the differences in stoping widths. The average stoping width and external waste width carried shows a small increase compared with the previous quarter due to bad hanging in one or two of the working places. During the quarter the mechanical haulage in the No. 1 Main Incline came into commission. Owing to the grade of this incline being rather steep for the safe use of trucks with the ordinary types of jockeys, these latter have been dispensed with and the trucks are attached to the mechanical haulage rope by means of about an 8-foot length of 5/16th chain, having a hook at each end, which is easily connected and disconnected from both the rope and the truck. The system works very satisfactorily, and runaways are practically unknown. Previously the trucks on this incline were operated by a double drum hoist.

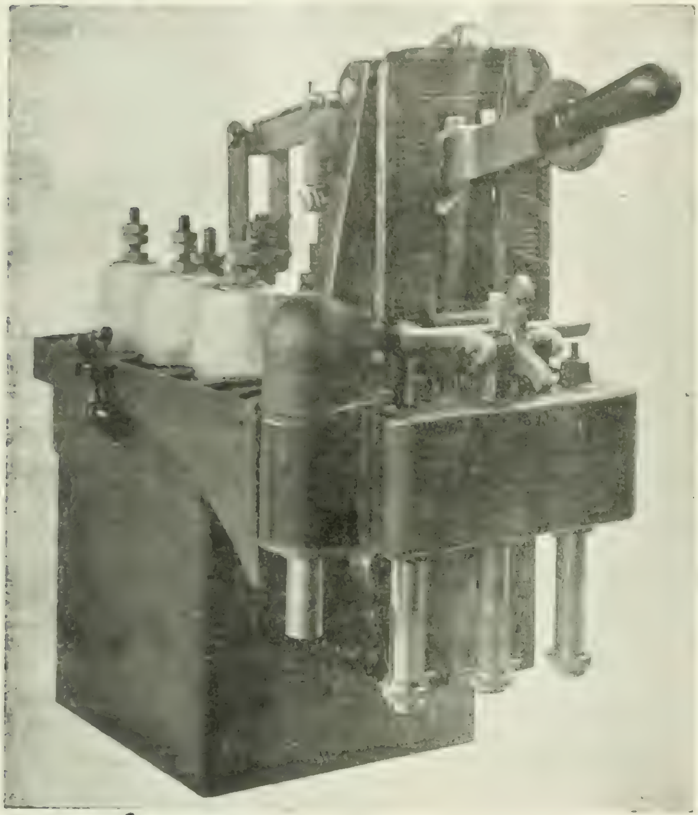
Working Costs.

Compared with the previous quarter the mining costs, excluding development, show an increase of 9d. per ton mined, the tonnage mined being approximately 10,000 tons less. The chief increases in expenditure are: under the heads of timbering and packing, 4·19 pence; shovelling and tramming, 4·66 pence; and pumping, 6·96 pence per ton mined, the latter increase being due to an augmentation of the pumping plant.

Effect of the Premium.

Of the total revenue from gold the sum of £22,515 4s. 9d. represents the estimated premium, being at the rate of 14s. 8·64d. per ounce, and equivalent to 5s. 11·29d. per ton milled. Compared with the previous quarter, the gold premium shows a decrease of 4s. 9·28d. per ton milled. Compared with the previous quarter, the total working expenses show a decrease of 7·278 pence per ton milled. The working profit has decreased 4s. 9·466d. per ton milled, which agrees within the fraction of a penny with the decrease which has taken place in the gold premium per ton milled. It might be pointed out that but for the gold premium this mine would have been worked at a loss during the last six months. Notwithstanding that the estimated premium on gold for the quarter amounted to practically 6s. per ton milled, the profit was only 5s. 10d. per ton milled, and had the company mined ore of the average value of its payable reserves, this profit, I estimate, would have been converted into a loss of 5s. 10d. per ton milled. It is therefore obvious that unless a considerable reduction can be made in working costs the richer ore reserves will become depleted at such a rate that the life of the mine will be very seriously shortened. At the time of writing, owing to the strike, called by the South African Industrial Federation, all operations on the property have ceased, including pumping, and the mine is consequently flooding. The company obtains its electrical current from the Kleinfontein Power Association, and as this concern has ceased generating current due to the strike no power is obtainable to operate the pumps.

The Anglo-Swedish Electric Welding Co., Ltd., Wood Wharf, Greenwich, London, S.E. 10, England, is prepared to negotiate for the use of the Kjellberg Process of Electric Welding in various parts of South Africa, this having proved itself both by independent tests and by results obtained in practice to be unequalled for boiler and general repairs. Only firms who have someone in London to negotiate on their behalf need apply.



Witton OIL Switches

Witton oil switches are noted for their sturdy, mechanical strength and conservative electrical rating. Our illustration shows a Witton Switchboard type oil switch, 500 volts, 100 amps. fitted with overload and no voltage trips.

Witton Oil Switches, standardised in all sizes for voltages up to 60,000 volts can be supplied for remote control, electrically or mechanically operated. Stocks are carried in this Country.

The British General Electric Co. Ltd.

Representing THE GENERAL ELECTRIC CO., LTD., of England

Head Office:—
Johannesburg
Corner Loveday and Anderson Streets
Box 2406 Phone 4242 3 Tel.: "Current"

Capetown
83/89, Castle St.
Box —— 1327
Phone —— 1401 2
Tel.:—"Induction"

Durban
56, Field Street
Box —— 922
Phone —— 1793
Tel.: — "Ampere"

Agents at:—Port Elizabeth, East London, Maritzburg Bulawayo, Delagoa Bay, Beira, Dar-es-Salam, Tanga, Zanzibar, Mombasa, Nairobi Uganda, Etc

The Mine Managers' Views of the Crisis.

WHY STRIKE MUST FAIL—INDUSTRY MAY RE-START ON A SOUNDER AND MORE PERMANENT BASIS—SOME PLAIN SPEAKING.

Mr. H. R. Hill, the outgoing President of the Mine Managers' Association, had an unusually difficult task in making his valedictory address last week, but he discharged it with his wonted ability. We print some important portions of his address below. The manager's viewpoint is admirably summed up in the following concluding lines of his peroration:—" Provided that the right of managers to conduct operations and organise the work on their mines in the most efficient and economical manner was safeguarded, or, in other words, that the manager was in a position to manage his mine without interference from trade unions, giving due consideration to the conditions of work of his employees, the industry would restart on a sounder and more permanent basis."

Mr. H. R. Hill in his presidential address at the 27th annual meeting of the Association of Mine Managers, held at the Scientific and Technical Club, Johannesburg, said, *inter alia*: The difficulties of managers in their relationship with their employees, contrary to anticipation that the opportunity given for freer discussion between the management and representatives of the workmen would lead to better understanding and a more cordial spirit of co-operation, had not been minimised during the year. On the contrary, the past year had been characterised by constant sectional strikes which on occasions had threatened to spread to the whole industry.

The marked reduction in the cost of living justified the industry in taking up the question of a reduction in the cost of living allowance, and a sliding scale was mutually agreed upon. Unfortunately the leaders of the trade unions would not realise that the rapid fall in the selling price of gold made it necessary for the mines to obtain relief in other directions if the industry was to be maintained on its present scale. It was considered that this relief would best be obtained through the following two channels, viz.:—

(a) Alteration of the existing contract system.

(b) Re-organisation of underground work and the modification of the *status quo* agreement.

It might be thought that the question of altering the existing contract system was solely due to an attempt to reduce the excessive earnings of one class of underground men, but another vital point was involved. Owing to the scarcity of technically trained men, the industry had been compelled to recruit many of its junior underground officials from the ranks of the miners. Now the moneys earned by contractors had risen to a high figure, due not so much to the inherent ability of the majority of the contractors as to the improvements made by the management in providing more efficient and expensive types of rock drills and better organisation in regard to the supply of air, water and drill steel.

Contractors Earn Up To £200.

These features, coupled with the fact that the unions were able, by threat of dislocating operations, to prevent any adequate reduction in the prices paid to the contractor per unit of work done, enabled the contractors to earn in some cases up to £200 per month and on most mines to earn considerably more money than that paid to shift bosses. In fact, in very many cases the amounts paid to contractors were in excess of the salaries of the mine captains.

The difficulty naturally arose that it was impossible to get many of the best miners to undertake the more arduous duties of shift boss for the lower wage, and the efforts of managers to train up officials from men who through their service had shown themselves possessed of the gift of handling men, failed, when these men, in order to acquire the necessary practical experience, were made contractors and earned sums much in excess of those paid to underground officials.

The more important channel, and one from which a considerable amount of relief was anticipated, was the second measure referred to. It would be noticed that the two proposals had been coupled together. This was done because the two were so intimately connected that, in the past, any attempt to obtain the necessary re-organisation compatible with maximum efficiency had been obstructed by means of the *status quo* agreement.

Mr. H. R. Hill, the outgoing President of the Mine Managers' Association and Consulting Engineer to the Union Corporation.

Situation Not Understood.

Proceeding, Mr. Hill said that he did not think the general public appreciated the situation that arose on the individual mine when steps were being taken to make the working of the mine more efficient. The public was accustomed to think of efficiency on standards applicable to factory practice, where, given a certain labour force, the measure of efficiency was gauged by the number of articles manufactured or produced, and a doubling of the number of articles so produced would be considered as doubling the efficiency of the establishment.

On the mines, however, once the economic limit of the mill was reached the measure of efficiency could only be judged by the size of the labour force required to produce the necessary tonnage, and an increase in efficiency on any such mine must necessarily be dependent on the employ-

[illegible] at a [illegible]. The [illegible] apparent [illegible] opposed by the [illegible] of [illegible].

The [illegible] that although [illegible] would result in the [illegible] of [illegible] operations in the opening up of other mines which would, in time, absorb all labour which for the moment was rendered superfluous and fully compensate for the temporary contraction in the present underground white labour forces [illegible].

The attitude of the labour unions, as evidenced by the present strike, however, had proved that they did not possess the necessary breadth to realise the situation as it existed, their policy being more one of obstruction than construction, with an indication, further, that they were quite prepared to risk ruining half the industry in an attempt to dictate as to how the industry should be run

Strike Must Fail.

The attempt would fail, and, knowing as they did that the majority of the moderate employees were willing to return to work on the conditions offered, and that they realised that the outcry against the removal of the colour bar had no foundation, the leaders of the strike would be well advised to ignore the views of the extremist section: accept the position that the fight was not against the Chamber of Mines but against inexorable economic conditions, and instruct their men to return to work.

"T.C.L." Capital.

MODIFIED PROPOSAL: DIRECTORS DIFFER.

The London secretaries of the Transvaal Consolidated Land and Exploration Co., Ltd., have issued the following circular:—

In his address to shareholders at the twenty-sixth ordinary general meeting, held in Johannesburg on June 15, 1921, the chairman foreshadowed the convening of an extraordinary general meeting in April, 1922, to consider the possible further repayment of capital to shareholders.

Figures were quoted in the chairman's address which indicated that the repayment might amount to a maximum of 5s. per share, thus completing the full programme of repayment which the Board outlined in 1919. At the same time the estimates showed that a repayment of 5s. per share would be likely to absorb practically the whole of the company's ready cash. The Board has during the past months kept this matter under close consideration. During the period financial conditions generally have become more stringent, and the depression which was beginning to affect South Africa has been more severely felt.

Recent estimates, however, indicate that the company's cash position at June 30, 1922, may be expected to approximate quite closely to the previous forecast, the estimated available cash at June 30, 1922, being £271,000. A distribution of 5s. per share with its attendant expenses would absorb approximately £256,000, which would leave the company with only some £15,000 of working capital for its current business and possible development. In his address above-mentioned the chairman intimated that it should be possible to build up a developmnet fund out of current income, but since that date the depression among the farming community (which reacts directly upon this company's income) has become more acute, and it is thought unwise to place too much reliance for the time being upon that source.

Conserving Cash Resources.

Your directors are all strongly of opinion that it is vital to the company's interests to conserve adequate cash resources, especially in times of depression such as those now being experienced. They consider it would, under present circumstances, be very unwise to distribute all available cash, and to retain inadequate funds for development or unforeseen eventualities.

At the same time the majority of your directors feel that the policy enunciated three years ago is the correct one to pursue—namely, to reduce the capital to a level which will permit of the distribution of reasonable dividends —and they have, after mature deliberation and close investigation, come to the conclusion that a reduction of capital should be effected at the date already stated, but that the amount should be limited to one-half of that previously mentioned. This would carry into effect the policy indicated, give shareholders a substantial sum in cash, and, at the same time, leave the company with a reasonable amount of working capital. The question of the further and final repayment of capital, reducing the nominal amount of the shares from 12s. 6d. to 10s., would be dealt with at some future date and as soon as circumstances permit, but it should be remembered that this course must, in the best interests of shareholders, be dependent upon the economic conditions and outlook at the time.

One director does not agree with this decision, being of opinion that all the company's available funds should be conserved, especially in view of possible requirements for development of the coal deposits underlying the farm Van Dijk's Drift. The majority of the Board is satisfied that the distribution can be effected without prejudice to the development of Van Dijk's Drift, as some years must elapse before railway and harbour facilities and other important considerations make it practicable.

A meeting will be held in the Corner House, Johannesburg, on April 20, at noon, to consider the following resolution: "That the capital be reduced from £728,410 10s., divided into 971,214 shares of 15s. each, whereof all are issued as fully paid, to £607,008 15s., divided into 971,214 shares of 12s. 6d. each fully paid, and that such reduction be effected by returning to the holders of the 971,214 shares the sum of 2s. 6d. per share in cash and by reducing the nominal amount of all the said 971,214 shares from 15s. to 12s. 6d. each, and that the chairman for the time being of the company or of the confirmatory meeting be, and he is hereby, authorised to apply by petition to a competent court for confirmation of the said reduction."

BENONI'S ENTERPRISE.

The Benoni Municipality has recently acquired the triangle of land formed by the Benoni railway and a portion of Benoni township on the north, and the Dunswart-Kleinfontein section of the Boksburg-Springs railway on the south. This acquisition will provide several hundred much-needed industrial sites, besides creating a market for building materials. It is understood that the Brakpan municipal authorities are negotiating for control of a large area of land as an industrial centre.

Box 3807. Tel. 5892.

WRIGHT'S ROPES

H. ALERS HANKEY - - - Sole Agent.

Premier Company and the Diamond Outlook.

PROSPECTS OF AN IMPROVEMENT.

Mr. P. Ross-Frames, C.M.G., in the unavoidable absence of Sir Thomas Cullinan, D.S.O., presided at the nineteenth annual general meeting of the Premier (Transvaal) Diamond Mining Co., Ltd. "Since the beginning of this year," he said, *inter alia*, "there have been some indications of a slight improvment in the demand for diamonds and consequently it behoves the great producers to nurse the market in conformity with the policy that has made the diamond business such a great industry. The fall in the English bank rate is very encouraging and indicates cheaper money, which means an increased demand for luxuries."

Continuing, Mr. Ross-Frames said that the number of loads treated was considerably less than half of that of previous years, since 1916, when mining operations were resumed, but it was satisfactory to find that an improvement had taken place in the yield per load. The scale of operations at present was the lowest possible, short of shutting down, but it was not competent for the company under the law to suspend operations entirely under existing circumstances. When the smash came in the diamond market, this company, unlike other great producers, had practically no stock of diamonds on hand, and as the board was anxious not to add to the distress caused through unemployment, operations were continued on a reduced scale, and the employees longest in the service of the company were retained. Since then it had become necessary to curtail the company's activities to a further extent. After paying two dividends on preference shares, a balance of £77,921 1s. remained for the shareholders, and was available for the payment of the next preference dividend. The diamonds sold during the financial year realised the sum of £439,636 1s. 6d. The reports and accounts were adopted, and a resolution that the representation of De Beers Consolidated Company, Ltd., on the board should be increased by the election of two additional directors was confirmed. A full report of the proceedings at the meeting will appear in our next issue.

The Sheba Reconstruction.

The Sheba Gold Mining Co. is to reconstruct. A special meeting held in London has approved of the scheme after some show of opposition. It will be remembered that the chairman at the July meeting fully explained the company's position. The shareholders were told that if developments continued satisfactory it would be necessary to raise a substantial amount to thoroughly equip the mine; further that all available funds had been expended and that arrangements had been made to provide for expenditure for the next few months. A loan of £25,000 was secured and this had been utilised for additional development. The results obtained are now stated to have been very encouraging and have proved the continuance in depth of payable ore in both the Zwartzkopje and Intombi sections. The latest reports state that in the Zwartzkopje No. 10 level east drive, the average width of ore from 120 to 140 feet is five feet of an average value of 10 dwt. per ton; that in a borehole, started below this level, good ore has just been struck from 55 to 57 ft., assaying 2 oz. 6 dwt. per ton over 21 in.; that the drive and crosscut to bottom of winze No. 2 B show a width greater than was expected; that these developments indicate probable ore reserves much greater than the estimate on basis of tonnage developed, and that the prospects are more encouraging than is suggested by the estimated ore reserves, which at December 31, 1921, constituted a total of 59,785 tons. In addition there is a further tonnage of 15,200 tons of 6 dwt. ore in the Great She and Royal Sheba blocks. The time for action, in the opinion of the board, has come, and their suggestion is that a new company should be formed to take over the assets and liabilities

should be formed to take over the assets and liabilities of the existing one; that this company should have an authorised capital of £200,000, divided into 1,200,000 shares of 5s. each; that present shareholders should, for every 10 shares now held by them, be entitled to apply for 11 shares in the new company, credited as paid up to the extent of 2s. 6d. per share, leaving a liability of 2s. 6d., payable by easy instalments. The full amount of liability would provide £149,000, and the subscription of 800,000 shares has been guaranteed. The cash capital secured by the guarantee alone (£100,000) in the opinion of the directors, "should be sufficient to discharge the liabilities of the present company and enable the new one to resume gold production within about six months." The facts certainly seem to warrant the bold action the board have taken in their effort to re-establish the company on something like its formerly prosperous basis.

KALAHARI DIAMONDS AND DIAMOND FIELDS OF AFRICA, LTD.

Sir William Maxwell, presiding at a meeting of Kalahari Diamonds, Ltd., said the company had secured a valuable share interest in the Diamond Fields of the Africa Exploring Company. That company owned four new diamond mines in the Postmasburg diamond field, which in the opinion of the directors, were the most promising discovered since the opening of the Premier Mine. There were already signs of improvement in the diamond market, and as trade expanded there was little doubt that large profits would be made by the mines which could produce diamonds economically, and of the high standard of quality which was the special characteristics of the diamond mines of Postmasburg.

BWANA M'KUBWA COPPER.

Particulars of New Company.

The Bwana M'Kubwa Copper Mining Co., Ltd., has been registered, with a nominal capital of £400,000 in 5s. shares, to adopt an agreement, dated December 15, 1921, between the Bwana M'Kubwa Copper Mining Co., Ltd. (incorporated in 1910), of the first part, the Selection Trust, Ltd., of the second part, the several companies, firms, and persons referred to therein of the third part, and R. E. Bayliss (for this company) of the fourth part; to acquire mines and mining properties, etc. The directors are to number not less than three and not more than eight. No persons had consented to act as directors to February 2, 1922. The British South Africa Co. have the right to nominate one director. Remuneration, £200 each per annum (chairman £400). Registered office, 19 St. Swithin's Lane, London, E.C.4.

Princess Estate.

At an extraordinary general meeting of shareholders of the Princess Estate and G.M. Co., Ltd., held last week, the extraordinary resolution passed on the 9th ult. for the voluntary winding up of the company was duly confirmed.

MINES DEPT. EXAMS.
CERTIFICATES AWARDED INSTITUTE.

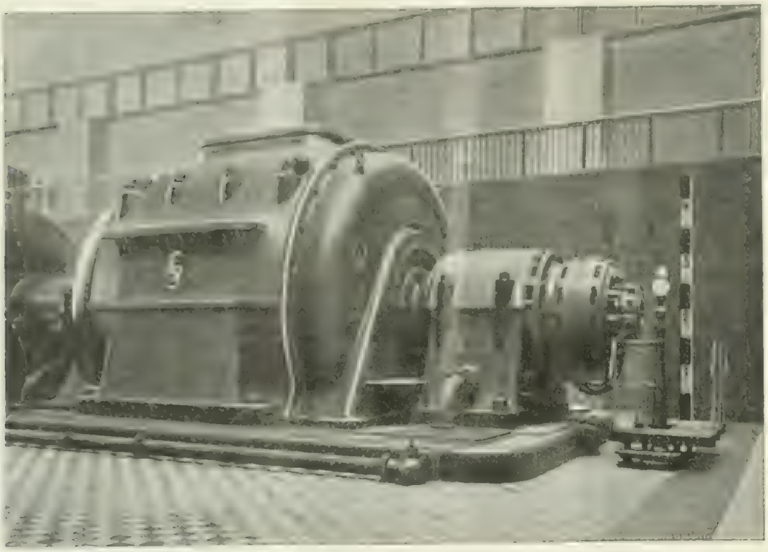
MANAGERS' EXAMS., September, 1921, January, 1922.

We obtained 15 out of a total 22 certificates awarded in South Africa

	Metal	Coal	Totals
Ours	9	6	15
Rest of S.A.	4	3	7
		Total for S.A.	22

OVERSEERS' CERTIFICATES (Metal).
So far as we know we have only had 6 failures during 1921, and secured two-thirds of the certificates issued in S.A. during the past two years.

TUITION (Metal or Coal) by class, correspondence or privately
Mining Institute (Prof. Yates),
St. James' Mansions, Eloff St. Johannesburg



A RECENT PRODUCT
OF
Messrs.
SIEMENS - SCHUKERT
WORKS.

60,000 K.V.A. Continuously
6,600 7,000 v. 1,000 r.p.m.

This Machine has given : entire satisfaction in : : operation. :

BRANCH OFFICE FOR SOUTH AFRICA:

C. KLEUDGEN, LTD.

Corner of LOVEDAY and MARSHALL Streets, JOHANNESBURG.

P.O. Box 1164. Telegrams "KLEUDCO" Telephone Central 5435

"HUMBLE" SAFETY
DETACHING HOOK

SOLE AGENTS:
GEO. CRADOCK
—AND CO. (S.A.), LTD.—
75-77, CULLINAN
BUILDINGS.

P.O. Box 316. Telephone 539.
Tel. Add.: "ROPES."
JOHANNESBURG.

ROBINS "PERFEX"
BALANCED SCREENS.

¶ Give favourable results on the fine screening of a variety of materials—Coal, Coke, Fertiliser, Sand and Gravel, Slag, Stone, etc.

¶ They supplement the Robins Rotary Grizzly, and have its characteristics—low power consumption, freedom from vibration, high efficiency and capacity, small headroom.

¶ **Moreover, they have a positive screening action on damp or wet material, and cannot plug up.**

¶ In all these respects they are an improvement over revolving or shaking screens.

For full information address:

ROBINS CONVEYORS (S.A.), Ltd.
(Head Office: Robins Conveying Belt Co., New York, U.S.A.)
Engineers, Founders, Machinists
Conveying & Hoisting Machinery
Materials-Handling Installations and Appliances
50, STELLA BLDGS., RISSIK & NEW STREETS
BOX 4736, 'PHONE 4182, JOHANNESBURG

The South African Mining and Engineering Journal.

HEAD OFFICE: 176-180 Stock Exchange Buildings (2nd Floor), Fox Street, JOHANNESBURG, Union of South Africa.
Telephone **913.** P.O. Boxes **963** and **4573.**
Cables and Telegraphic Address: "MINING JOURNAL."

ANNUAL SUBSCRIPTION RATES: Oversea, £2; Union of South Africa and Rhodesia, £1 10s.; Local Delivery (Town only), £1 6s., payable in advance.

AGENTS FOR GREAT BRITAIN AND AMERICA: Argus South African Newspapers, Ltd., Byron House, 82-85, Fleet Street, London, E.C. 4.

Copies of this Journal are obtainable at all Branches and Agencies of the Central News Agency, Ltd., at all News Agents and Railway Bookstalls throughout South Africa, and at the London Agency as above.

CONTENTS. PAGE

Articles:

The Aims and Ideals of the Associated Scientific and Technical Societies 909
Modder East's Outlook 913
The Union's Diamond output for 1921 913
The Mine Manager's Views of the Crisis 915
"T.C.L." Capital 916
The Premier Company and the Diamond Outlook 917

Editorial:

Progress of the Strike 919
Gold Law Reform 919
Rand Gold Shares in the American Market... ... 920
Share Market 933

Engineering Section:

Natal Railway Electrification 925

Trade and Industry Section:

The Week in the Mining Material and Engineering Trades 929
Letters to the Editor 931
Company Meeting: Ferreira Deep 933

EDITORIAL.

THE PROGRESS OF THE STRIKE.

Several important developments mark the sixty-third day of the coal strike and the fifty-fourth day of the gold strike. After an all-night sitting the Assembly by a substantial majority approved of the Prime Minister's actions, policy and plan for bringing the strike to an end. On the following day, however, the House indulged in another full-dress debate on the Boksburg affray between the police and the strikers; and the debate drew from General Smuts a strong and unequivocal statement regarding the attitude of the Government. "We are the representatives of law and order," he said, "and on us rests the great responsibility to-day of seeing that things are kept going in this country, and whether we enjoy the confidence of these men or not we are going to discharge that duty, and we are going to stop at no length to discharge it. We are determined," he added, "to keep our temper and keep a clear head and judgment, and keep also a clear field and see that the law is maintained in this country, and see that it does not revert to a state of revolutionary conditions, which, as I have said, would be far more fatal than the strike. In the attitude which the Government has taken up on this matter I am sure it deserves the support of every part of this House." Opinions differ as to whether the Government is right in withholding the declaration of Martial Law, but, at any rate, the police assisted by volunteers are now making strenuous and successful efforts to safeguard those who return to work. To the belated proposals of the S.A.I.F. continued in the letter from the Secretary for Mines, dated February 25, the Chamber of Mines has now returned a categorical reply. In the course of its letter the Chamber says it has considered the proposed basis, and finds it entirely impracticable and unacceptable, and then goes on to say that it shows no evidence that the Federation has in any way grasped the real facts of the situation. In rejecting the Federation's proposals, the Chamber once again emphasises that the basis already laid down by it is the minimum upon which operations can be resumed on the mines with any prospect of success. "The industry cannot reopen on any terms less favourable to it than those already enunciated, and the sooner this is recognised by the Federation and the men on strike, the better for all concerned. The Chamber does not make this pronouncement in any dogmatic spirit, but because it realises so thoroughly that its conditions are in agreement with the economic facts of the situation, and will bring about a permanent settlement holding out a reasonable prospect of future success for the mining industry and for the large community dependent upon it." The foreging seems to be the last word on the subject to date, and it certainly leaves no room for misundertanding of the position of the industry. The situation became further complicated by the strike of Johannesburg Municipal power station employees and tramwaymen during the week. The broadening of the strike is due to the action of the Municipality in using Transvaal Coal Owners' Association—or so-called "scab"—coal. After two nights of darkness the power station was successfully manned by volunteers, including members of the Associated Scientific and Technical Societies; and the town's lighting supply, at any rate, now seems assured. Every credit should be given to those public-spirited engineers who have so courageously and unselfishly come, in the face of much discouragement, to the aid of the town in this crisis to maintain its essential lighting services. Dr. Orenstein's address to the Associated Scientific and Technical Societies on the subject of service and citizenship—which is printed elsewhere in this issue—has thus borne good and unexpectedly early fruit! For the rest, the week has produced the usual crop of incidents. The use of explosives has grown but the damage done is still surprisingly slight, and the efforts in this direction all seem singularly wanton and futile. The capture and maltreatment of so-called "scabs" goes on, but the police have shown more determination in preventing this most reprehensible development, and their efforts culminated in the tragedy at Boksburg on Tuesday, when three strikers met their death and a captured "scab" was only saved at the last moment from a dreadful fate. It is to be hoped that this sorry business may have the effect of bringing those responsible for the cruel sport of "scab-baiting" to their senses. Meanwhile, the men are steadily going back to the mines, and each day the number of those signing on and actually restarting work increases. Another satisfactory feature is that recruitment of a limited number of natives for specified work on certain mines is now to take place. Authority has been granted for the replacement to a certain extent of the heavy wastage on mines which have been very badly hit by the exodus of the labourers. The idea is that they can be put in a position to start work once things are normal. The restrictions against the issue of inward passes for the labour districts have not been removed; but to meet the special circumstances it is understood approximately 1,500 natives are to be allowed in. This is one of the bright features in an otherwise depressing week. Devoutly do we hope that in our next issue we may have some better news to chronicle.

GOLD LAW REFORM.

Reform of the Gold Law in the direction of relieving the burden of taxation on small men and small joint stock enterprises is much overdue. We understand that the

Mines Department had [illegible] drafted a Bill [illegible] the most urgent reforms and removing the most glaring [illegible] from the existing law, but it appears [illegible] to have been shelved for the time being; at least that seems to be the conclusion derivable from the following telegram from Capetown to the papers this week. It seems that in the House of Assembly Mr. M. [illegible] asked the Minister of Mines and Industries: Whether in view of the fact that the exaction of claim licences in many cases constitutes an unbearable burden and retards the expansion of the mining industry, it is the intention of the Government during the present session of Parliament to afford relief to claim holders by the introduction of legislation providing in certain cases for the remitting of claim licence moneys payable under the present Gold Law of the Transvaal?" In reply the Minister said: "The question of the introduction of amending legislation dealing with the payment of claim licences under the Transvaal Gold Law is at present receiving the consideration of the Government." As has been pointed out time and again in these columns, it is the insecurity of tenure under the Gold Law with the constant fear of confiscation on non-payment of licences no matter what may have been spent which deters investors from supplying the needed capital for small mines. If the Government share of licence money were remitted, fines abolished and reasonable security of title and tenure were established for properties where bona fide development work has been done and where large sums have been expended, it would [illegible] comparatively easy to raise the [illegible] required to ensure development and bring such mines successfully to the producing stage. Doubtless, consideration of the surrender of revenue involved may cause [illegible] members of the Government to oppose such measures. Such consideration would be overwhelmingly out weighed by a clear appreciation of the enormous benefits such reform would ensure for the whole country. Instead of a dwindling mining industry we might soon have expansions in outlying mines both to the East and West of the Rand — mines which could be profitably worked with a 5½ dwt. grade of [illegible] with gold at 85s. per ounce, and the £100,000 or £150,000 of revenue sacrified would, probably, soon be returned to the Treasury. The coal mines would benefit, unemployment would be relieved, the railway traffic would be increased, and new markets for the farmers would come into being.

RAND GOLD SHARES IN THE AMERICAN MARKET.

The announcement that the shares of the Anglo-American Corporation of South Africa have been successfully introduced on the New York market has been one of the few bright features of a dull week. Opportunely enough, our New York correspondent writes us as follows by the last mail:

"Interest in the gold situation and gold shares is rather keen at present. In the Toronto and Montreal share markets [illegible] during the next eleven months. Greater achievements are expected in the Porcupine field, where Hollinger, Dome and McIntyre are located, and also in the even newer districts north of Porcupine. These Canadian promoters and brokers are depending on New York for a part of the stimulus. McIntyre has just been listed on the New York Stock Exchange, where Dome is also numbered among the mining issues. Hollinger, really the largest mine in this country, is still among the unlisted issues here. Canadians are heralding the praises of their gold resources to the disadvantage of South Africans. The claim has been advanced that Hollinger is now the leading gold mine of the world because it will surpass the Crown Mines in production. This claim, probably, rests in the expectation that the Crown will be closed and the Hollinger operated on a much larger scale this year. Hollinger's output in 1920 was [illegible] oz. as compared with 672,738 oz. by the Crown Mines. Rand Mines (American shares) are quoted on the New York Stock Exchange, and the Anglo-American Corporation—owning shares in the Rand Selection Corporation—is identified with some of our most prominent bankers, notably Messrs. Ryan & Sabin."

Our correspondent concludes on the following cheerful note: "New Yorkers entertain no prejudice in favour of Canada and if, as now indicated, gold shares become prominent here, there is no particular reason why Rand companies cannot share in the movement."

Notes & News.

The Power Shortage.

Owing to the shortage of power, caused by the strike at the Johannesburg Municipal Power Station, the editorial pages of the *South African Mining and Engineering Journal* have been considerably reduced, but readers may rest assured that all the usual features will be resumed in full as soon as the power supply warrants it.

* * *

Postmas to Re-Start.

A wire was despatched during the week instructing the manager of Postmas No. 1 mine to start washing with one pan.

* * *

Busy Man's Page.

Owing to the necessity of going to press a day earlier than usual, due to the power shortage, the "Busy Man's Page" is unavoidably held over till our next issue.

* * *

Tarry's Profits Drop.

Messrs. E. W. Tarry & Co., Ltd., the well-known firm of hardware and machinery merchants, have to report a sharp decline in prosperity during the twelve months to August 31st last. Trade conditions in South Africa, where the company operates, have been extremely difficult, owing to the collapse of prices, the stagnation in the diamond market, and the depression in the agricultural districts. Under these circumstances it is not surprising that, as compared with the previous year, the net profit of the company should have fallen by £28,000 to £9,234.

* * *

Minerals Separation Progress.

In the beginning of last year the Board of Minerals Separation, Limited, decided to start an office and research laboratory in South Africa, its headquarters being in Johannesburg. The froth flotation process, although comparatively new to South Africa, is, of course, by no means a new process, and it is claimed that froth flotation to-day has proved itself to be the most economical and efficient means of concentrating every kind of ore known. The Falcon Mine, Rhodesia, has been using Minerals Separation process for many years, and now Minerals Separation have plants running at the Cam and Motor and the Transvaal Silver and Base Metals Mine.

* * *

Osmiridium in the Banket Reef.

At a recent meeting of the Chemical, Metallurgical and Mining Society of South Africa, Mr. R. A. Cooper exhibited some specimens of rare metals from the banket reefs of the Rand. Describing the exhibits, Mr. Cooper said:

"The presence of iridium in the banket reef has been known for many years and at times it has been present in sufficient quantity in the mill black sand concentrates to occasion considerable trouble in gold assaying. Until recently, however, no attempt appears to have been made to obtain the platinum group metals in a saleable form from the black sands. A small amount of osmiridium concentrate is now being recovered in daily current milling operations on some of our mines. During the last few months a considerable amount of study has been made on this osmiridium in the Rand Mines Laboratory, and several ounces of the pure metals, iridium, osmium, ruthenium, platinum and rhodium have been prepared. During these preparations a small portion of a typical crystalline compound of each metal was reserved, and I have much pleasure in exhibiting these compounds and some of the metals. I have not yet found the metal palladium in any raw or treated concentrate."

Plight of the Falcon.

In view of the continued drop in the price of copper, Falcon Mines, Ltd., have found it necessary to post up the following notice on the mine belonging to that company:—"Owing to the further heavy drop in the price of copper, which is now lower than it has been for over seven years, it is regretted that further retrenchment on this mine has become imperative, and unless an improvement takes place very shortly it may be impossible to carry on operations. The management desires to express its appreciation of the way in which employees have co-operated with it during the past year, and they may rely on every effort being made to keep the mine going.

* * *

New Railways.

The Railway Board has been travelling about the country and the following appear to be the most likely new lines they have decided upon: To relieve distress at Kimberley a railway from that town to Barkly West and Borrelskop along the Vaal River has been definitely promised by the Prime Minister. In addition, the Government has stated that one of the lines on its programme will be a railway from Belmont to Douglas in order to open up the splendid irrigation lands along the Orange River. Other probable lines are: One from Oudtshoorn to Calitzdorp and Ladismith, opening up a splendid valley ripe for irrigation development ; a line from Franklin to Kokstad, perhaps leading also to Matatiele; a line from Frankfort in the Free State to Balfour in the Transvaal.

* * *

Worcester Old Gold Mine.

It will interest former shareholders in the Worcester Gold Mining Co. to learn that the adjoining property's (Sheba gold) reconstruction scheme was carried, on a poll, by a huge majority, after having been lost by 16 votes to 26, at a meeting, when protests against the terms of reconstruction were freely ventilated. We (*Worcester Standard*) learn that the Worcester property, near Barberton, has been finally abandoned by the syndicate which took it off the company's hands, owing to the water having flooded the old concern to such a depth that it became no longer worth the cost of extracting the pillars. Some underground properties, of trifling value, were also abandoned; but all the surface works, especially electrical, were disposed of, Mr. Worman, the manager, remaining to the finish. The syndicate members have, we hear, recouped themselves for their outlay.

* * *

What an Iron and Steel Industry Means.

With the opening of the Tata Iron and Steel Company's works at Jamshedpur, India, the town has undergone a complete change. The area in possession of the company covers about 25 square miles, and the pay-roll contains 35,000 names, with monthly salaries and wages aggregating about Rs. 8 lakhs (£53,333). Apart from other developments contemplated by this vast concern, a number of subsidiary companies are springing into existence. Companies about to begin operations include the Enfield Cable Company, the Tin Plate Company, the Wire Products Company, the Agricultural Implements Company, and the Hume Pipe Company. When all these companies have started work and the extension of the Tata Company's plant is completed, the population of Jamshedpur is estimated to reach a quarter of a million, against 71,000 shown in the last census returns. The moral for South Africa is obvious.

* * *

Reopening of Namaqualand Copper Mines.

If the recent report in the "Cape Times" of the visit of the Government engineers to Port Nolloth and O'okiep means the possibility of the railway and harbour being acquired by the Union, the hopes of Namaqualand will be again raised high. Government control over rates and harbour dues would inevitably lead to better conditions for farmers and freighters generally than private control. There is no other harbour in South Africa of importance that does not belong to the Union, and it would seem inevitable that sooner or later private interests will cease to exercise control. Considerable interest is being caused by the statements that the Namaqua Copper Company's mines are to start work in June, and that the Cape Copper Company are also contemplating re-opening at an early date. One of the mines of the Cape Copper Company has started pumping already. Work can begin again, however, only upon the erection of up-to-date machinery, to cope with altered conditions, and the companies are to be congratulated on their enterprise.

* * *

The Outlook for Copper.

In an article in the current issue of *The Annalist*, Mr. Charles Hayden, vice-president of the Utah Copper Co., states that from careful study of the copper industry for the past fifty years it would seem that, as we get away from the influences of the War period, and again transact business under normal conditions, the time will come when the full maximum productive capacity of the world's copper mines will be called upon to supply the world's legitimate demand for copper metal. Supplementing these remarks, it is stated that the refined copper surplus has now been reduced to about 442,000,000 lb., of which only about 142,000,000 lb. are available for domestic purposes, the balance for export being in the hands of the Copper Export Association. It would, therefore, seem that unless the big producing mines resume active operations very soon, there is likely to be a shortage of copper before next June, and that a definite turn for the better in the copper industry is not a remote possibility.

More Light on Power Alcohol.

The possibilities of securing an abundant source of alcohol for power purposes afford a question which deeply concerns many regions of the world. The British Department of Scientific and Industrial Research is continuing investigations of this important problem. A special officer was appointed to collect data from different parts of the world as to the possibility of producing alcohol in bulk from local vegetable materials. The actual building up of alcohol from various substances such as calcium carbide has also been carefully studied. At present the results attained are not altogether promising; and the British authorities consider that the best prospect lies in evolving a process, either mechanical or bacteriological, of producing alcohol commercially from tropical vegetation or waste vegetable materials.

Explosives and Chemical Works

IMPORTANT FORTHCOMING PUBLICATION.

The "S.A. Mining and Engineering Journal" has now in preparation a special illustrated supplement dealing with explosives and chemical works of the Union. Several of the principal firms having factories of this nature are giving their active support to the publication, which will be issued as a supplement to the ordinary weekly issue of the Journal. Special commissioners are now visiting the various works, and the results of their investigations will be published in the supplement in the form of full, descriptive and illustrated articles. The supplement will also contain valuable data as to the quantities of explosives, fertilisers, chemicals, etc., produced in the Union, methods of manufacture and details as to markets and consumption. Prospective advertisers and manufacturers of chemicals, etc., interested in this supplement are advised to communicate with this office at the earliest opportunity.

The build *of the* Drill

SIXTY-FIVE years ago the first Climax Drill was made. Its manufacture marked an era of progress in mining machinery because that Climax Drill was built for service. Each year Climax Drills have been improved to meet the demands of modern mining conditions, until, at the present time, they stand alone for drilling speed, low cost of maintenance and popularity.

Save your bills-
Climax Drills
British —— from Handle
to Steel-Point

CLIMAX DRILLS
CLIMAX ROCK DRILL & ENGINEERING WORKS L$^{\text{TD}}$
4, Broad Street Place, London, E.C.2. Works:- Carn Brea, Cornwall.

(INCORPORATED IN GREAT BRITAIN)

Local Address: **49, STELLA BUILDINGS,**

Corner Rissik and New Streets, JOHANNESBURG.

P.O. Box 4256. Telegrams: "Thumbscrew." Telephone 2794.

The Week in the Sharemarket.

BUSINESS ON THE QUIET SIDE—STRIKE DEVELOPMENTS—ANGLO-AMERICANS THE FEATURE—ADDITIONS TO THE OFFICIAL LIST.

The strike leaders have so far been successful in prolonging their billets. Upon this they must be congratulated, as they form the only section of the community to whom the continuation of the strike is beneficial, but the terrible responsibility of consequent unemployment cannot be hidden from the rank and file much longer. On the other hand, their methods of sabotage cannot be too strongly condemned. It is this latter feature that has caused uneasiness in the market during the past week; not only the fear of damage to the mines, but that these despicable methods of terrorism and anti-liberty of the subject may force the men who have gone back to work to throw up their billets and prevent new men from working. Fortunately the strong attitude of the Police has created more confidence, and, although a cessation of workers returning was caused for the moment, the gradual flow has again commenced.

Beyond a marked demand for Anglo-Americans—owing to their introduction on the New York market—up to 21s. 3d., receding again to 20s. 3d., there is little in the week's market to comment upon. The following are now quoted on the official Stock Exchange list: Monteleo Diamonds, West End Diamonds, and Union 6 per cent. Loan, 1927-32 (taxable).

	Fri 24th.	Sat. 25th.	Mon. 27th.	Tues. 28th.	Wed. 1st.	Thurs. 2nd.
Anglo-Am. Corp.	18 9*	18 -10½	19 3	21 0	20 9	20 3*
Bantjes Cons.	6 3*	6 3	6 3*	6 3*	6 3*	6 3*
Brakpan Mines	44 3†	44 0†	44 0†	44 0†	44 0†	44 0†
British South Africa	11 3*	11 3*		11 3*		
Bushveld Tins			0 6*		0 6*	
City and Subs.	2 3*	2 2*	2 6†	2 5†		2 6*
City Deeps	41 9	41 0*	42 3†	40 0*	42 0†	39 6*
Clydesdale Colls.						21 6*
Con. Diamonds	15 3	15 3	15 9	15 9	15 4½*	15 4
Con. Investments.			21 0*			21 0*
Con. Langlaagtes			12 9*	12 9*	12 9*	12 9*
Con. Main Reefs	8 0*	8 3*	8 3*	8 0*	8 0*	8 0*
Coronation Colls.	28 0*			28 0*		
Do. Freeholds	0 7*	0 8*	0 8*		0 6*	0 8*
Do. Syndicates	4 3*	4 0*	4 3*	4 3	4 0*	4 0
Crown Diamonds	5 6	5 7*	5 10*	5 10		5 2
Crown Mines		32 0*		32 6*	33 0*	33 0
Daggafontein Mines	2 7*	2 6*	2 7	2 7	2 7*	2 7*
E.R. Coals	1 7*		1 6*	1 6*	1 6*	1 7*
E.R. Deeps	0 9*	0 9	0 10†			
E.R. Minings			7 0*		7 0*	
E.R. Props.	4 6*	4 6*	4 6*	4 6*	4 6*	4 7
E.R. Debentures	£80*	£80*	£80*	£81*	£80*	£80
Frank Smith Dmds.	3 10*	3 8*	3 9	3 8	3 8*	3 7*
Geduld Props.	50 0*	49 3	49 0	49 3	49 6*	47 3
Glynn's Lydenburgs	7 0*	7 0*	7 0*		7 0*	7 0*
Govt. Areas	77 0*	76 9*	77 3*	77 0	77 0*	76 9
Hume Pipes	9 9	9 9*	10 0*	10 0*		10 0*
Knight Centrals	4 4*	4 3*	4 4	4 3*	4 3*	4 3*
Lace Props.	7 3*	7 3*	7 3*	7 3*	7 9*	7 9*
Leeuwpoort Tins	7 0	6 9*	6 9*	6 10½	6 9*	6 9*
Lydenburg Farms.	4 9*	4 9*	4 6*	4 6*	4 10	4 9*
Meyer & Charltons.	61 3*		61 3*			60 0*
Midelvlei Est.	1 3*		1 3*		1 0*	
Modder Wests	0 9*		1 0*		1 0*	1 0*
Modder B.'s	24 6*	24 9	24 3*	24 0*	24 3*	24 6†
Modder Deeps	38 9a	38 6	38 0*	38 3*	38 6	38 6*
Modder Easts	6 4	6 0*		6 2*	6 3	6 3*
Natal Nav. Colls.	24 0*	28 0*	28 6*	28 6*		28 3*
National Banks	222 6†	220 0b				
New Era Cons.	5 9	5 6	5 3*	5 6*	5 6*	5 6*
New Geduld Deeps.	1 4*	1 4*	1 4*		1 4*	1 5
New Kleinfonteins	5 0*	4 8*	4 6*	4 7*	5 0†	4 6*
New Modders	66 3*	66 6	66 6	66 3*	66 0	65 9*
New Primrose	4 3*					
New State Areas	25 0*	25 9*	25 9*	26 3	25 6	25 0
Nigels	5 1*	5 1*		5 6*	5 0*	5 6
Nourse Mines	10 0	9 7½*	9 6*	9 9	9 9*	9 6
Pretoria Cements	40 6a	40 6*	40 3*	40 6*	40 6	40 6
Princess Estates	1 2*	1 2*	1 2*	1 2*	1 2*	
Rand Collieries						0 6*
Rand Nucleus	1 0*		1 0*	1 0*	1 0*	1 0*
Randfontein Centrals	9 0*	9 3*	9 0*	9 0*	9 0*	10 3
Do. Estates	14 10*	15 0*	15 1½	15 0*	15 0	15 1
Rouxville Diamonds	1 1*	1 3*	1 3*	1 3*	1 3*	1 3*
Roberts Victors	9 0*	9 0*	9 3*	9 3*	9 3*	9 0*
Rooibergs	3 0*	3 0*	3 0*	3 0*	3 0*	3 0
S.A. Lands	4 0*	4 1	4 0*	4 0*	4 0*	4 0*
Springs Mines	36 6	36 6	36 3	36 3*	36 6*	33 6*
Sub Nigels	10 9*	11 0*	10 9*	10 9*	11 0	10 6
Swaziland Tins	9 0†					
E. A. Alaah	13 0*	12 10*	13 0*	12 9*	12 9	
Transvaal Lands			14 0*	15 0*	15 0*	16 0
Trans. G.M. Estates						8 0
Transvaal Silvers	20 0	18 6*	19 0*	19 6	19 3*	19 0†
Tudors	0 9†		0 7*	0 9†	0 6*	
Van Ryn Deeps		60 0	59 9*	60 0		59 6*
Village Deeps				7 6†		
West. Springs	7 1*	7 1*	7 1*	7 1	7 1*	7 1*
West Rand Cons.					1 6*	1 6*
Western Rand Est.	3 3	3 1*	3 1*	3 0*	3 0*	3 3†
Witbank Colls.	35 3*	36 0*	36 0*	36 0*	33 6*	33 6*
Witwatersrands	16 0*					
Wit. Deeps	8 0*			7 9*	8 0*	8 0*
Zaaiplaats Tins	2 9*	2 9*	2 9*	2 9*		3 0†
Union 5 per cent.	£101½	£101½*	£101½*	£101½†	£101*	£101

* Buyers. † Sellers. a. Odd lots. b. Ex London.

Mining Men and Matters.

Mr. E. J. C. Meyer, manager of the E.R.P.M., has been elected President of the Mine Managers' Association for the current year.

* * *

Mr. H. R. Marriot, consulting engineer to the Central Mining and Investment Corporation in London, has left the Rand after a visit of some months.

* * *

The annual meeting of members of the Transvaal Chamber of Mines will be held on Monday, the 27th day of March, 1922, in the Council Room of the Chamber's new building (corner of Main and Holland Streets), at 2.30 p.m. Agenda: (1) Report of the Executive Committee for the year 1921; (2) election of members of the Executive Committee; (3) election of two vice-presidents.

* * *

Mr. Stanley Christopherson, who has been with the London Board of the Consolidated Gold Fields of South Africa, Ltd., since 1899, has been appointed deputy-chairman of the London City and Midland Bank. He was on the Board of that bank for several years. He remains on the Board of the Consolidated Gold Fields, but will not now take such an active part in the administration of the company. Mr. Christopherson, who is a director of the Standard Bank, resides in London, and visited South Africa in 1910. He was a well-known cricketer in the middle eighties, played for England several times, and was one of England's best fast bowlers in those days. He is a brother of Mr. Douglas Christopherson, of Johannesburg.

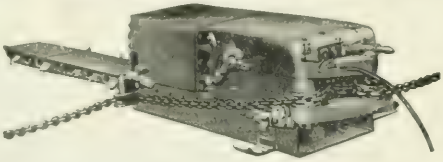
Consolidated Gold Fields.

The directors of the Consolidated Gold Fields of South Africa, Ltd., announce that in view of the adverse conditions which have prevailed since June 30 last, which are accentuated by the strikes in the Transvaal, the declaration of a dividend on the second preference shares, which in the ordinary course is payable on April 1, must be postponed. Whilst the directors regret the disappointment and inconvenience which will be thereby caused, they trust that the statement of the chairman, made at the shareholders' meeting on December 1 last, referring inter alia to the cumulative nature of the preference shares, will be regarded as an indication that the postponement may not be of long duration.

THIS IS A SULLIVAN C.E.9 LOW VEIN COAL CUTTER AND POWER CAR WITH TRAILER-TYPE REEL.

AND

THIS IS THE C.E.7 IRONCLAD SHORTWALL COAL CUTTER



MADE BY THE SULLIVAN MACHINERY COMPANY,
CHICAGO.

"THE ARISTOCRAT OF PORTABLE BELT CONVEYORS."
EITHER OIL OR ELECTRICALLY DRIVEN.

MADE BY THE BROWN PORTABLE CONVEYING MACHINERY COMPANY,
CHICAGO.

FOR FURTHER PARTICULARS APPLY TO:

THOMAS BARLOW & SONS (S.A.) LTD.

DURBAN.
P.O. Box 1011. Tel. Add.: "SHIPMENTS."
'Phones : .. .. 1, 1965, 2322, 2460.

JOHANNESBURG.
P.O. Box 6901. Tel. Add.: "SHIPMENTS."
'Phone .. .. 6503.

ENGINEERING SECTION.

Natal Railway Electrification.

FINAL REPORTS TO PARLIAMENT BY THE GENERAL MANAGER AND THE CONSULTING ENGINEERS.

"If electrification is not proceeded with now, it will be a national calamity." So writes Sir William Hoy in his report on the electrification of the Natal main line, which was issued this week and laid before Parliament.

A report by the Railways and Harbours Board was presented to Parliament in 1920, dealing with the electrification of certain sections of the South African Railways, and provision was made in the Estimates for 1920-21 and 1921-22 for preliminary work in connection therewith.

On the instructions of the Board, the General Manager and the consulting engineers have submitted reports, dated November, 1921, dealing specifically with the electrification of the section of the Natal main line between Pietermaritzburg and Glencoe Junction, and based upon a carrying capacity for down traffic of 30,000 tons gross as against 20,000 tons gross on which the engineers had previously been asked to report.

In submitting these reports, the Board is of opinion that the recommendations contained therein should be carried out, as it was convinced that if the Administration is to be in a position to deal with the anticipated increase in traffic steps should be taken without loss of time to augment the carrying capacity of this line, which end can best be attained by the adoption of the system of electrification as recommended by the consulting engineers.

The Board, therefore, recommends that approval be given to the electrification of the section Glencoe Junction to Pietermaritzburg, including the Howick branch line—a distance of 173½ miles—and that the necessary steps be taken to obtain Parliamentary sanction for the expenditure in connection therewith.

Financial Results Very Favourable.

The General Manager of Railways, in the course of his report, says: Notwithstanding the financial situation, I strongly advise the Administration to proceed with electrification, and I support Messrs. Merz and McLellan's recommendation that a start be made immediately with the section Glencoe Junction to Maritzburg—a distance of 171 miles—instead of the section Durban to Maritzburg.

Since Messrs. Merz and McLellan's original report, dated June, 1919, and my report, dated April 3, 1920, traffic on the Natal main line has expanded, and we have reached the stage when, in order to provide for the continued development that is in progress, we must either commence to electrify the line north of Maritzburg or face a very heavy capital outlay in doubling certain sections and in grade and other improvements.

Messrs. Merz and McLellan, in their report, make it clear that the best means of improving the carrying capacity of the Natal main line is by electrification, and I endorse this view. The financial results of the electrification of the section Glencoe Junction to Maritzburg are very favourable, representing an estimated saving in working expenses, compared with steam traction, of £237,510, or 215 per cent. on the net capital outlay. These results are based upon a comparison between the estimated cost of working a down traffic of 30,000 tons gross per day with steam power under the improved track and engine-power conditions which would have to be provided to handle that traffic, and the estimated cost of handling the same amount of traffic by electric traction. The estimated cost of electrifying the section Glencoe Junction to Maritzburg on the basis of a down load of 30,000 tons gross per day is £1,453,690.

Effect Upon Coal Bunker Trade.

Vessels burning oil fuel are increasing in number, and there are now fuel-replenishing facilities at Capetown and Durban. Conversions from steam to oil have become more numerous since the War, and in time this may have an effect upon the coal bunker trade. It is, therefore, to the export trade that South Africa must look for big developments. In view of the heavy decline in the price of coal in Europe and the adverse shipping freights for coal from South Africa, it is essential, if the trade is to retain the outlets it has and develop new markets, that the Administration should be in a position to transport coal for export at the cheapest possible rates. To do this we must have cheap power and cheap working costs. Oversea markets for other South African produce are also becoming highly competitive, and our export rates must be low to enable South African commodities to compete and allow producers a reasonable margin of profit. This can only be achieved by reducing working costs and modernising our methods.

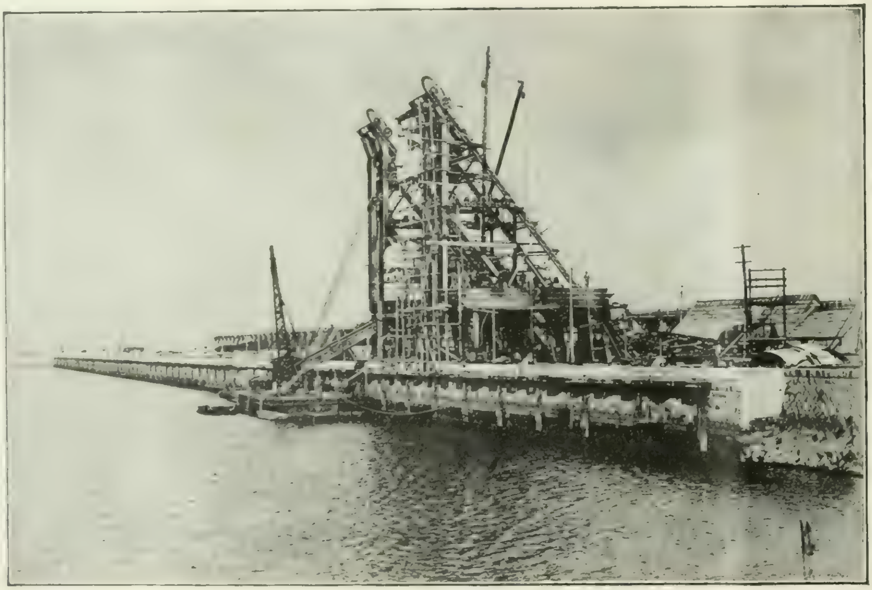
Should it be agreed to proceed with the work from Glencoe Junction to Pietermaritzburg, it might be advisable to consider the practicability of continuing the transmission line to Durban for the supply of power for municipal, railway and industrial purposes. This question is now being investigated by the consulting engineers and will, no doubt, be considered by Government in conjunction with the proposals under the Electricity Bill.

The National Aspect.

In considering electrification versus steam, the national aspect is an important one and cannot be disregarded. Electrification will provide all along the railway a trunk electrical line from which power can be distributed for industrial and other purposes. It will also open up great possibilities for by-product production at the power stations from waste coal. A plant is now being installed on a large scale in the neighbourhood of Newcastle (England) for the production of by-products by the distillation of coal at low temperature, and I recommend that Messrs. Merz and McLellan be asked to consider the advisability of designing the power station so that the necessary plant can be added for by-product recovery as soon as practicable.

HEAD, WRIGHTSON & CO.,
LIMITED,
THORNABY-ON-TEES. ENGLAND.

MANUFACTURERS OF
MINING MACHINERY, COLLIERY PLANT,
BLAST FURNACE PLANT,
AND ALL CLASSES OF
STRUCTURAL STEELWORK.
"NISSEN" STAMPS, TUBE MILLS,
GRINDING PANS, AGITATORS, TANKS,
FILTERS, Etc.



COAL LOADING PLANT FOR JAPAN.

JOHANNESBURG OFFICES:
HEAD, WRIGHTSON & Co. (South Africa) Ltd.,
64-66, Standard Bank Chambers, Commissioner St.
P.O. Box 1034.——Telephone 3524

If electrification is not proceeded with now it will be a national calamity. The time for embarking upon the scheme has never been more opportune or more favourable. If we spend large sums now on new steam engines and on works and track improvements necessary to convey the increased traffic to be provided for, it means postponing electrification for some time to come and staying development in the direction in which it is most essential for the future well-being and progress of the State.

The issue is one of paramount importance to the future of South Africa. Electrification will have a far-reaching effect upon transport and industry, and a decision to proceed with the work will mark the dawn of a new era in railway and industrial development in South Africa.

A Wise Proceeding.

The Consulting Engineers, Messrs. Merz and McLellan, in their report state: Our own experience over a number of years has proved that where electric operation is once introduced, whether on railways or in factories, the advantages arising therefrom, quite apart from the actual financial economies or profits realised, are such that as soon as the opportunity arises the use of electricity is extended as a matter of course. For this reason we are convinced that the electrification of the Natal main line would be fully justified even if the return were only sufficient to pay a reasonable rate of interest on the capital expenditure. The figures given, however, show that electrification would be a profitable as well as a wise proceeding on the part of the Government.

Taking into account all the foregoing considerations, we recommend that an immediate start on the Natal main line should be made by electrifying the section between Glencoe Junction and Maritzburg. At a later date, as soon as financial circumstances make it possible, the electrification should be extended from Maritzburg to Durban.

SPANISH NORTHERN RAILWAY ELECTRIFICATION PROJECT.

A contract for the electrification of forty miles of the Spanish Northern Railway is announced by the Sociedad Iberica de Constructiones Electricas, of Madrid, Spain one of the associated companies of the International General Electric Company, Inc., of New York. This initial orde constitutes the most recent and one of the largest Europea railway electrification projects now under development.

The Spanish Northern electrification will employ th high voltage direct current system, which not only has s many notable examples in the United States and elsewhere but which has been adopted in Europe as standard for th railways also of Great Britain, France and Holland.

The equipment to be supplied by the Sociedad Iberica de Constructiones Electricas will consist consist of six 78-metric ton, six motor locomotives, two complete sub-stations, each comprising two 1,500 kilowatt, 3 unit motor generator sets, transformers and switch-gear, and the material necessary for line construction.

The first electrification project of the Spanish Northern comprises about 40 miles of the Leon-Gijon line running through the mountains between Ujo and Busdongo. Although this is a single track line, traffic is extremely heavy, as it is a link between the mining district and the northern seaboard through a mountainous region with many tunnels, considerable grades and severe climatic conditions.

The electric locomotives on order will be of the freight type, with the following dimensions:

	Feet.	Inches.
Length over bucklers	46	0
Height	13	11
Width of cab	9	8
Rigid wheel base . . .	11	6
Maximum wheel base	35	0

The locomotives will be arranged for regenerative braking, and will operate at 3,000 volts. The locomotive speed at continuous rating is 35 kilometres an hour. Pantograph collectors will be used similar to those on the C.M. & St. P.R.R. locomotives, having a double contract shoe.

AUSTRALIA'S RELATIONS WITH FORMER ALIEN COUNTRIES.

The Australian Government has decided to lift the embargo on the importation of goods from former enemy countries from August 1, but a Tariff Board will be established to determine the duties on merchandise from countries with a depreciated currency, in order to prevent lumping.

RADIUM MINING IN CORNWALL.

Active steps are being taken by a well-known London financial group to resume mining for radium at the Polgarrick Radium Mine, situated near Truro. The mine is known to possess two rich lodes of uranium ore, and it is hoped to set up a new industry in Cornwall by treating the ore on the spot. The work of operating the mine was abandoned during the War, but the necessary machinery had already been installed, so that there should be no delay in resuming activities at once. The valley in which the Polgarrick Mine is situated is said to be teeming with radio activity, and a great future for this industry in Cornwall seems assured. Radium to-day is worth about £750,000 per ounce.

THE HYDROGEN, OXYGEN & PLANT CO., Ltd
(REGISTERED IN ENGLAND).
99, PARK ROAD, NEWTOWN, JOHANNESBURG.

Manufacturers of .. .. Hydrogen and Oxygen in bulk for Industrial and Medical purposes. .. ..

Sole Representatives and Stockists for the
Alloy Welding Processes,
Limited,
LONDON.

Manufacturers of .. .. Electrodes and Plant for Oxy-Acetylene and Electric Welding purposes. .. ..

General Managers in S.A. :—
Messrs. DOWSON & DOBSON, LIMITED, JOHANNESBURG.

ALL COMMUNICATIONS TO BE ADDRESSED TO THE WORKS.

'Phone 3053 - - - Telegrams: "HOPCO." - - - P.O. Box 5404.

FAIRBANKS
VALVES

CONVENIENCE IN OPERATING, STRENGTH, RIGHT DESIGN AND WORKMANSHIP THROUGHOUT, LONG LIFE, UP-TO-DATE RENEWABLE PARTS AND ECONOMICAL MAINTENANCE ARE FEATURES THAT RECOMMEND THEM.

LARGE STOCKS ARE ALWAYS ON HAND.

SOLE AGENTS FOR SOUTH AFRICA:

BARTLE & CO., LTD.

Loveday House, Box 2466. Phone 3553.
Wires: "FAGGOT."

JOHANNESBURG.
AND AT KIMBERLEY & DURBAN.

Telegrams: "NIVONIA," Johannesburg.
'Phones: 2196, 2197, 2198

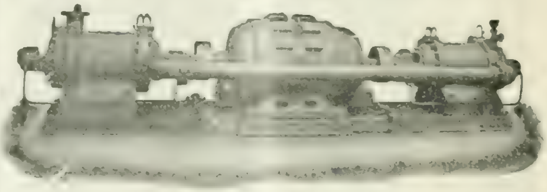
J. & R. NIVEN, Ltd.,
ENGINEERS, CONTRACTORS, MERCHANTS.

BALATA BELTING
JAMES DAWSON & SON, Ltd
BITUMEN SHEETING
GEO. M. CALLENDER & CO., Ltd
BOILERS
PENMAN & CO., Ltd
COAL CUTTERS AND CONVEYORS
JEFFREY MANUFACTURING CO.
COLLIERY PLANT
CAMPBELL, BINNIE, REID & CO
DRILL STEEL
JOHN NICHOLSON & SONS, Ltd.
ENGINES, LOCOMOTIVES
ANDREW BARCLAY, SONS & CO., Ltd.
ELECTRIC LIFTS
A. & P. STEVEN, GLASGOW
CRANES
BUTTERS BROS., GLASGOW.
HOSE, VALVES, SHEET RUBBER
THE LEYLAND & BIRMINGHAM RUBBER CO., Ltd.
LUBRICANTS
THOS. HINSHELWOOD & CO., Ltd
STEEL SCREENING
THOS. LOCKER & CO., Ltd.

Barsdorf's Buildings, Marshall Street,
JOHANNESBURG.

SULZER
HIGH-LIFT CENTRIFUGAL
PUMPS.

For Mine Drainage, Waterworks, Etc.



Pumping Set designed for lift of 2,500 ft.

LARGE LOCAL STOCKS IN MEDIUM AND LOW-LIFT PUMPS.

For particulars apply to:

RICE, WILSON & HERD,

86, 87, 88, 96, Standard Bank Chambers, Commissioner St
P.O Box 930 Telephones 2299 & 2300 JOHANNESBURG.

Also South African Agents for:

CALLENDER'S CABLE & CONSTRUCTION CO., LTD.
BRITISH THOMSON-HOUSTON CO., LTD., etc., etc.

TRADE AND INDUSTRIES SECTION.

Week in the Mining Material and Engineering Trades.

PARLIAMENT'S MOTION EXPECTED TO EXPEDITE THE END OF THE STRIKE—PROMINENT COMMERCIAL LEADERS' VIEWS ON POSITION—IRON AND STEEL—TIMBER AND BUILDING MATERIALS—INDUSTRIALISTS' VIEWS ON TRADE UNIONISM—COAL RATES REDUCTION TO CAPE PORTS.

General.

With the resolution carried by a majority of 14 which was passed last Tuesday in the House of Assembly, Capetown, recommending the miners to act upon the advice of General Smuts and return to work on the best terms obtainable pending the fixing of terms to be arrived at by an Imperial Commission to be appointed by the Government, a stage nearer to the end has been reached. There is little doubt that the recommendation of the full-dress debate in Parliament affirming the Government's policy in the labour dispute will be generally acted upon by the men at present out on strike, more especially as such resolution carries with it the weight of both Government and Parliament that such a step is, after a very exhaustive debate, the best thing for the strikers to do under the circumstances. It carries with it, also—if that indeed were necessary after the measures adopted during the past few days—assurance on the part of the Government that adequate police protection will be afforded those workers desirous of returning to work who may previously have been intimidated by their unions. In the meanwhile, and before the receipt of the Parliamentary recommendation, satisfactory, if necessarily somewhat slow, progress has been made in the back-to-work movement, which has continued in increasing momentum since the Prime Minister's appeal of three weeks ago. On the whole, therefore, the community now sees more hope of a speedy end of the two months' struggle than has been apparent since its outbreak.

In summarising views expressed by leaders of the commercial community on the position as it now is, and probably may be in the near future, it may at once be stated that all laid especial stress upon the very serious losses which have been sustained by merchants in the course of the past two months, during which practically no business has been transacted at all. This, following upon the very lean months of the previous year or eighteen months, has been a very severe blow to commercial houses, as many bills are now maturing for goods in which for many weeks there has been no turnover, and the banks naturally in times like the present are chary of granting financial facilities. The present is undoubtedly a bad time for merchants. It reminded one large importer of the result of a pebble cast into a pond. The circles at first caused by the pebble are not very wide in circumference but in time expanded and eventually reached the ends of the pond. In like manner the present stagnation of business is affecting everybody in South Africa to-day, those outside the Rand perhaps not as yet to any very considerable extent, but as time progressed the present atrophy of business would make itself acutely felt. Everybody in the Union is, of course, more or less dependent upon the gold mining industry; it affects every phase of our lives and every other industry is bound up with and dependent upon it. Money is tighter than ever, and should the labour trouble last much longer, trade, already considerable disorganised, would be so seriously injured that it would take a very long time for it to recover. This merchant thought that the Chamber of Mines were being badly let down in respect of their optimism, and that they would eventually have to concede a little more than they have done up to now to the workers before a final and satisfactory settlement could be made.

Another influential commercial man said that the coming out of the Power Station and Tramwaymen would necessarily accentuate matters, but hasten the end. The majority of the community, he said, think that, despite the inconvenience to the public by the failure of such an important utility service as the Power Station this would prove in the end a blessing in disguise, as it is realised that it is high time that this storm centre should be dealt with in the drastic manner it deserves. For years past the Power Station workers had been a menace instead of a benefit to the town, and, although highly paid and not too heavily burdened with work, had on every conceivable occasion abused their position, being practically dictators and not servants of the Council. It was recognised that the Town Council had not been masters in their own house for many a long day, and that the time had come to place this essential service once and for all on a proper footing.

One of our foremost American importers whom we called upon stated it as his opinion that, if the Government had taken right action at the proper time all the present trouble might have been avoided. If the Chamber of Mines had

Robert Heath & Low Moor, Ltd.,

Sole Manufacturers of

LOW MOOR
IRON AND RIVETS.

SPECIALITIES:

COLD BLAST PIG IRON
HAULAGE GEARS
PUMPS
WINDING ENGINES
OVERWINDING GEARS
PIT TUBS
COLLIERY PLANT AND BUILDINGS
AXLES AND FORGINGS
DROP STAMPINGS
CHILLED AND GRAIN ROLLS
CASTINGS UP TO 20 TON EACH

SOLE AGENTS IN SOUTH AFRICA FOR PRODUCTS OF
LOW MOOR WORKS:

SAMUEL OSBORN
(S.A.), LIMITED,
'Phone 4573 **JOHANNESBURG.** Box 3162.

[illegible] upon in Pretoria and consulted with the Government before the strike had [illegible] some constructive action might have been taken which would have obviated the present long-drawn-out struggle. This country has always seemed to be a country of [illegible], of letting things slide, and of sitting down patiently and waiting to see what will happen. This might be good policy, but he was [illegible] unable to understand it.

It is generally felt that the present crisis will result in some [illegible] in business. Eventually it may be good for the country in bringing prices down to a workable level, but in the meantime the pinch will be felt acutely. The present position, which has been created by artificial means and the gradual closing of the avenues of trade, will necessitate great patience, care and thought in nursing that trade back to normal again. Trading will of course be unable to restart vigorously right away, but only slowly and gradually and probably imperceptibly to begin with. In the opinion of all, after such an upheaval as we have experienced, it is bound to take months to get business back to normal and for money to get into circulation again.

Prices are, of course, nominal in the absence of any business, but preparations are being made for good work ahead.

The irony of the position affecting the strikers is exemplified by the latest returns regarding the exodus of natives, which has now reached a total of nearly 47,000 boys, meaning, roughly, 4,700 fewer white jobs now available, as against the gradual retrenchment of about 2,000 redundant white workers proposed by the Chamber of Mines.

Iron and Steel.

Business during the past week, apart from a few insignificant lines for districts outside the Witwatersrand area, has been practically *non est*. This continued absence of sales on the part of mining material merchants is, as is only natural, being reflected in the retrenchment of staffs and the accession to the ranks of the already large army of unemployed of many who have in no way been connected with the merits or demerits of the present labour trouble.

Second-hand Machinery.

There is practically nothing doing in the second-hand market and there are a good many big orders hung up on account of the strike. The only business now being done is up-country orders, which are not worth talking about. The industrial world is as much affected as the mines, and many works have closed down for want of electric power and curtailed business. This applies also to the outside industrial works which are using steam. There are a lot of second-hand dealers feeling the pinch very acutely, and in several instances have practically gone "broke." There is very little speculation on the part of second-hand dealers in view of the uncertainty of some of the low-grade mines closing down entirely, which will no doubt throw a lot of machinery on the market, but with the companies that will be left it will not take long to absorb saleable machinery and parts that will thus be offered. In sum, there is naturally at the moment very little business being done, and dealers like others are awaiting the end of the strike with as much patience as they can command.

Second-hand Iron and Timber.

There is very little doing in the second-hand iron and timber market, prices ruling at about 8d. to 9d. for timber and 6d. to 7d. for iron.

British Engineering Dispute.

The Engineering Employers' Federation have posted lock-out notices, which come into operation on March 11, as a result of the dispute in regard to overtime. The Federation has impressed upon the Amalgamated Society of Engineers the gravity of the situation which has arisen owing to the trades union questioning the basic principle on which the industry is conducted. A conference between the employers and the union will be held on March 7. The threatened lock-out is confined to the engineering industry and does not affect shipbuilding trades. About 500,000 men are directly affected.

Industrialists' Views on Trade Unionism.

An important member of the engineering and foundry trades in the course of a chat this week said: The question now is of taking the bull by the horns and recognising that trade unionism is destructive of the best interests of this country, or indeed of any country. This is a country, of course, not on a par with European countries, and which upheavals of the kind we are at present experiencing here on the part of the union classes will simply destroy. We have got a very large and apathetic public in the country; outside the centre actually under the industrial tyranny the public is very apathetic. But it should not be so, because sooner or later that public will feel the backwash very severely. In other countries, as far as industrial troubles are concerned, the public awakens far sooner to the seriousness of the position, being probably more immediately affected and having a longer experience behind it. Because labour countries have found it to their advantage to co-operate with trade unionism it does not follow that their medicine is anything less than poison to a pastoral community like South Africa. Even trade unionists themselves cannot be other than doubtful whether their unions are a benefit to themselves. Economic conditions, supply and demand, etc., being the factors which govern finally the well-being of every member of the State. The time is far past when the capitalistic classes could enslave labour generally, without democratic governments, free education, freedom of the Press, freedom of speech, etc.—all of which are facts notwithstanding the contradictory vapourings of windbags at every street corner. It is to-day perfectly impossible for capitalistic industries to manipulate conditions to their advantage to such an extent as would prove permanently disadvantageous to labour at large. Trade unionism must be admitted by its members to be one of the most potent factors in the creation of unemployment, and has become in countries like this at last an enemy to everyone. On its merits, to be or not to be a trade unionist is a foregone conclusion in any country, and was in his opinion sheer lunacy in a country where our real workers are black semi-savages, outnumbering us three or four or five to one. A State is a community of individuals banded together for mutual protection and profit, every individual being out first and foremost for, and always for, his own personal advantage. That is indisputable, in spite of anything idealists may say to the contrary, the selfishness in our own natures being described, in its most acceptable figure of speech, as self-preservation. That being so, the State is a State to its own advantage, and probably in

MAGNOLIA
ANTIFRICTION METAL
TRADE MARK
"FLOWER" BRAND

HAS THE LOWEST CO-EFFICIENT OF FRICTION.
KEEPS down the bill for lubricants, making **BEARINGS** smooth as glass and keeping them **COOL** under heaviest pressures and highest speeds.
Manufactured and Sold By—
THE MAGNOLIA ANTI-FRICTION METAL CO. OF GREAT BRITAIN, LIMITED
49, QUEEN VICTORIA STREET, LONDON E.C.
Agents for South Africa: FRASER & CHALMERS, Ltd., Johannesburg, Bulawayo and Salisbury

many cases such a State furthers its own position irrespective of and callous to the feelings of sister States in the great world State. Trade unionisms or combination of individuals of any kind must be looked upon as self condemned, their objects being invariably to further the interests of their members regardless of the welfare of the State at large. Most individual power is limited, and mental powers are as nothing compared with the mighty destroying forces that collective bodies become, firm and welded together by their necessarily selfish interests. Time is not at the disposal of the ordinary individual who has a living to make to elaborate and follow out the whys and wherefores for many of the questions and puzzles that we are now living amongst, but the above is food for thought even if many and abler people have touched upon the question fully and from many standpoints. Two men in a boat cannot divide themselves, neither can three, neither can any number if in one boat.

Oils and Colours.

White lead, 39s. per 50 lb. keg; English red lead, 10d. per lb.; dry white lead, 1s. 6d. per lb.; linseed oils, raw or boiled, small bottle 1s. 6d. each, 4 imp. gall. 35s.; spirits of turpentine, small bottle 2s. each, 12s. 6d. per ·83 imp. gall.; turpentine substitute, 5s. 6d. per tin, each 5-6th imp. gall.; finest linseed oil putty, in 100 lb. drum bulk, 4½d. per lb.; English putty, in bladders, 6d. per lb.; colours ground in oil, 1s. 6d. to 4s. 6d. per lb.; dry colours, 6d. to 10s. 6d.; colours ground in water, 1s. to 2s. per lb.; in turpentine, 2s. 6d. to 10s.; ready mixed paints, 1s. 6d. per lb., 70 lb. drums 75s.; roof paints, 16s. 6d. per 14 lb. tin, 75s. per 70 lb. drum; varnishes, 25s. to 47s. per imp. gall.; pumice stone, 1s. 3d. per lb.; beeswax, 1s. 6d. per lb.; alum, 9d. per lb.; creosote, 4s. 6d. per 5-6th imp. gall. tin; gum arabic, 3s. 6d. per lb.; methylated spirits, 5s. 6d. per tin 5-6th imp. gall., bottles 1s. 3d.; resin, 8d. per lb.; coal tar, 4s. 6d. per ·83 imp. gall., 17s. 6d. per 4 imp. gall.; Stockholm tar, 9s. 6d. per ·83 imp. gall., 47s. 6d. per 5 imp. gall.; common glue, 10d. per lb., good quality cake 1s. 3d., finest Russian 1s. 6d.; gold leaf, English plain, per book 3s. 9d., transferred per book 4s. 3d.; aluminium leaf, plain 1s. 9d. per book, transferred 2s. per book.

Coal for Cape Ports: Reductions in Railway Rates and Dock Charges.

With effect from March 1 the rates for bunker coal from all collieries to the Cape ports have been reduced by 37d. per 2,000 lb., and the charge at the Cape ports for loading and trimming bunker coal in the dock in working hours has been reduced from 36d. to 18d. per 2,240 lb. No reduction is being made in the bunker rates to Durban and Lourenço Marques, or in bunkering charges at those ports.

ASBESTOS
PROPERTIES and FIBRE
ARE PURCHASED BY
AFRICAN ASBESTOS MINING CO., LTD.
P.O. Box 504, BULAWAYO
Telegrams: "Safasco," Bulawayo 'Phone No. 356
Johannesburg Correspondents:—HUGGINS & CO., LTD.
Consolidated Building JOHANNESBURG
Telegrams: "Turbros" P.O. Box 5105 'Phone 574

Letters to the Editor.

NEW WEST BONANZA GOLD MINING CO., LTD.

To the Editor, S.A. *Mining and Engineering Journal.*

Sir,—In your issue dated 11/2/22, you mentioned under developments in Klerksdorp district that the above mine has been re-pegged. As I have in my possession a considerable number of assays which may be of interest to the present owners, I shall be obliged if you can furnish me with their addresses or otherwise get me into communication with them. Thanking you in anticipation,

Yours faithfully,
I. Eckel.

P.O., Heidelberg, Transvaal,
28th February, 1922.

[Perhaps those interested may communicate direct with the writer of the above.—EDITOR.]

IN DEFENCE OF THE "SCAB."

To the Editor, *S.A. Mining and Engineering Journal.*

Sir,—When the scab appears on a wound it means that the healing period has well set in. In the same way when the wholesome and essential scab, or, in other words, when the man of moderate views and common sense makes his appearance in industrial matters it means that the schism is closing up and that the period of wholesome healing has been reached in the mining fields. So why all this opprobrium attached to the word "Scab." No reason at all. I would much rather be called "Scab" than "Bolshevist," "Communist," "Revolutionary," "Extremist," "Hothead," or "Die-hard" much rather—any day. Yours etc.,

"SCAB."

ALLOY WELDING PROCESSES.

To the Editor, S.A. *Mining and Engineering Journal.*

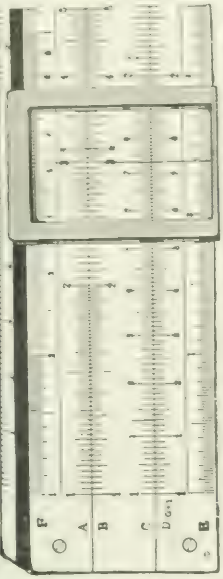
Sir,—Our attention has been directed to your issue of 3rd December, 1921, containing reference to Quasi-Arc Welding Process and Electrodes in advertisement inserted by Messrs. Reid Brothers (South Africa), Ltd. As proprietors of Alloy Welding Process and manufacturers of A.W.P. Electrodes, we take very considerable exception to the statement contained in this advertisement, which we consider misleading and untrue. We must, therefore, ask you to insert this letter in the next issue of the S.A. MINING AND ENGINEERING JOURNAL, in order to correct any false impression which may have been created by the statements contained in the advertisement of Messrs. Reid Brothers. (1) A.W.P. Electrodes were officially approved by Lloyd's Register of Shipping on 7th January, 1920, for use in ship construction, and they have since been extensively employed for this purpose in this country and abroad. (2) The British Admiralty also approved the use of A.W.P. Electrodes, and several orders were placed during 1920 and 1921, but a very large order was received in November last for the supply of A.W.P. Electrodes to the Royal Dockyards at Portsmouth, Sheerness, Devonport, Rosyth, Chatham, Malta, and Gibraltar. For your private information we enclose list of shipbuilding firms in this country to whom A.W.P. Electrodes are supplied in quantity, and we invite you to apply to any of these, also to Lloyd's Register of Shipping and the Director of Contracts at the Admiralty in order to verify the above statements.—Yours faithfully,

For Alloy Welding Processes, Limited,
J. CALDWELL, Managing Director.

P. & O. House, 14 16 Cockspur Street,
London, S.W.1, 7th January, 1922.

[A list of eleven leading shipbuilding firms is enclosed with this letter.—EDITOR.]

THE DAVIS SLIDE RULE



WITH CELLULOID FACINGS
FOR ALL TECHNICAL CALCULATIONS

THE [illegible] may be performed by the aid of the [illegible] [illegible] [illegible] it may be used for a variety of technical calculations. [illegible] lines, the engineer may compute the strength of beams, moments of inertia, horse-power of engines, hydraulic formulae, areas of circles and ellipses, cubic contents, weights, conversion of British into metric and other systems of measurement, without putting down a single intermediate quantity. The electrical engineer may solve all problems involving the application of Ohm's law of the relation between current, electro-motive force, and resistance. The surveyor may plot surveys by rectangular co-ordinates and set out curves.

This Davis-made 10-inch Slide Rule can be supplied from stock

Sole Agents for South Africa

BARTLE & CO. LTD.,
Loveday House Box 2466 'Phone 3553
JOHANNESBURG.
Also at KIMBERLEY and DURBAN.

DAVIS-MADE MEANS HIGHEST GRADE

Delagoa Bay Lands Syndicate, Limited

(Incorporated in the Transvaal.)

NOTICE TO SHAREHOLDERS.

NOTICE IS HEREBY GIVEN that the Nineteenth Ordinary General Meeting of Shareholders in the above Syndicate will be held in the Board Room, Consolidated [illegible] and Harrison Streets, Johannesburg, on TUESDAY, the 28th DAY OF MARCH, [illegible] for the purposes following:

1. To receive and consider the Balance Sheet and Profit and Loss Account for the year ended 31st December, 1921, together with the Reports of the Directors and Auditor.
2. [illegible] of the Articles of Association, but is eligible and offers himself for re-election.
3. To appoint an Auditor for the current year, and to fix the remuneration for the past audit.
4. To transact any other business which, under the Articles of Association, may be transacted at an Ordinary General Meeting.

The Transfer Books will be closed from the 11th to the 28th March, 1922, both days inclusive.

AND NOTICE IS HEREBY FURTHER GIVEN that an Extraordinary General Meeting of the above Syndicate will be held at the same place and immediately after the conclusion of the Annual General Meeting above-mentioned, for the purpose of considering and if deemed fit sanctioning the borrowing by its Board of Directors of sums not exceeding in the aggregate [illegible]

By Order of the Board.

Johannesburg Consolidated Investment Company, Ltd.,
Secretaries.

Per FRANK [illegible]

Head Office, Johannesburg,
[illegible] February, 1922.

BANTJES CONSOLIDATED MINES, LIMITED

(Incorporated in the Transvaal.)

NOTICE TO SHAREHOLDERS.

I.—TWENTY-FIFTH ORDINARY GENERAL MEETING.

NOTICE IS HEREBY GIVEN that the Twenty Fifth Ordinary General Meeting of Shareholders for the year ended 31st December, 1921, will be held in the Board Room, Second Floor, The Corner House, Johannesburg, on FRIDAY, the 5th MAY, 1922, at 11 a.m., for the following business:—

(1) To receive and consider the Balance Sheet and Accounts for the year ended 31st December, 1921, and the Reports of the Directors and Auditors.

(2) To elect Directors in the place of those retiring in accordance with the provisions of the Company's Articles of Association.

(3) To determine the remuneration of the Auditors for the past audit and to appoint Auditors for the ensuing year.

(4) To transact any other business which ought to be transacted at an Ordinary General Meeting, or which is brought under consideration by the Report of the Directors.

II.—EXTRAORDINARY GENERAL MEETINGS.

AND NOTICE IS HEREBY GIVEN that an Extraordinary General Meeting of the above Company will be held in the Board Room (Second Floor), The Corner House, Johannesburg, on the 5th day of MAY (immediately after the conclusion of the Ordinary General Meeting, which has been convened for 11 o'clock in the forenoon for that date), for the purposes following, namely:—

To consider and, if deemed fit, to pass Resolutions to the following effect, namely, placing the Company in voluntary winding up, appointing Liquidators, defining their powers and fixing their remuneration.

IN THE EVENT of the above Resolutions being passed in the manner required for the passing of Extraordinary Resolutions, they will be submitted for confirmation as Special Resolutions to a further Extraordinary General Meeting of the Company, which will be held at the same place at 11 o'clock in the forenoon on the 27th day of May, 1922.

The Share Transfer Books of the Company will be closed from the 29th April, 1922, to the 5th May, 1922, both days inclusive.

Holders of Share Warrants who desire to be present or represented at the Meetings shall produce their Share Warrants (or may at their option deposit same) at the places and within the times following:—

(a) At the Head Office of the Company in Johannesburg, at least 24 hours before the time appointed for the holding of the meetings;

(b) At the London Office of the Company, No. 1, London Wall Buildings, London, E.C.2, at least thirty days before the date appointed for the holding of the meetings;

and shall otherwise comply with the "Conditions as to the issue of Share Warrants" now in force.

Upon such production or deposit a Certificate with Proxy Forms will be issued, under which such Share Warrant holders may attend the metings either in person or by proxy.

By Order of the Board.

RAND MINES, LIMITED.
Secretaries.

S. C. STEIL.
Secretary.

Head Office: The Corner House,
Johannesburg, Transvaal,
3rd March, 1922.

The Week's Meetings.

FERREIRA DEEP.

20th ANNUAL MEETING.

The 20th annual meeting of shareholders of the Ferreira Deep, Ltd., was held on 2nd March, Mr. Frank Raleigh presiding. The Chairman said: The profit earned for the year is practically entirely due to the additional revenue received above the standard price of gold.

The development accomplished shows a falling off due to the small area remaining in the mine to be explored, and only resulted in the disclosure of 64,700 tons of rock which, however, was of good grade. The ore reserves show a decrease of 213,000 tons and now amount to 780,300 tons made up of block ore, pillars not immediately available for stoping, and broken ore in the form of packs. The only ground remaining to be developed is that contained in a portion of the claims purchased from the Village Main Reef Gold Mining Company, and, in the area obtained from the Village Deep, Ltd., under a tributing agreement which latter is referred to in the reports before you. These areas are at present estimated to produce about 100,000 tons of payable ore but as they have still to be developed, and consequently are not yet included in the ore reserve, this estimate is subject to adjustment.

Ore Reserves.

The ore remaining in the mine at present may be summarised as follows:—

Payable ore reserves, 780.314 tons: estimated payable tonnage yet to be developed, 100.000 tons.

Further tonnage will be derived from the low grade main reef ore, of which a large quantity exists, which is not included in the ore reserves. During the year 61,700 tons were mined, and this tonnage may reasonably be expected to be maintained for some time to come. Finally, there is the ore to be derived from reclamation work, which last year produced 72,100 tons; although it is certain that a considerable quantity can yet be obtained from this source the tonnage is too uncertain for me to estimate.

The Question of Life.

Owing to the depreciating price of gold and the present uncertainty regarding working costs, it is most difficult to determine for how much longer the company may be able to continue profitable operations, but I think the figures which I have given indicate a further life for the mine of at least three years. The difficulty, however, of supporting the mine and keeping the shafts in a satisfactory condition is such (largely owing to the fact that it is almost entirely surrounded by worked-out areas) that it is possible some severe earth tremor or fall of ground may have such serious results as to nullify this estimate of its life.

The Fire and the Strike.

The operations of the company since the close of its financial year were disturbed, as you know, firstly, by the disastrous fire in the underground workings, which commenced on December 7 and caused the total cessation of work for 13 days, and subsequently, by the unfortunate strike of workmen which started on January 10, and is still in progress. The breaking of ore in the mine has been resumed on a small scale with the aid of the company's officials and a few miners; ore treatment has also restarted.

[illegible] occurred in No. 1 Incline Shaft, and completely blocked it for a distance of 91 feet. Owing to the strike the shaft has not yet been cleared. Unfortunately five white men were entombed in the fall re[illegible]

No Dividend.

The direct effect of the fire, apart from the regrettable death-roll and serious damage to the mine, was [illegible] of £5,154 for the month of December; the added complication of the labour crisis at a time when it was hoped that the reclamation of No. 1 Shaft, and progress towards resumption of full activities would be unrestricted, has made it extremely difficult to gauge the immediate prospects of the company. The results of the first five months' operations are not, therefore, comparable with those for the corresponding period of 1921. The marked and steady fall in the price realised for our product has accentuated the position. It is clear that no profit will be earned for the current half year, and consequently there can be no dividend distribution as at March 31, 1922.

Appropriate record has already been made of the courageous action of the officials and men who were concerned in fighting the fire, and in assisting in the attempts to rescue the employes who were entombed. I should like to make mention here of the Board's high appreciation of the self-sacrifice displayed by those who so readily volunteered for these hazardous tasks. They showed great bravery and recognition of their services is being suitably conveyed to them. The Board expressed its sincere and respectful sympathy with the relatives of those men who perished in the catastrophe.

The Latest in Scientific Ventilation.

Very rapid strides have been made during recent years in the development of ventilation systems in Great Britain. Quite the most ingenious installation for an assembly house is that which is being arranged in the new Council Chamber of the London County Council. Each member is supplied with a current of pure air at the proper temperature, the speed of the current being so adjusted that no feeling of draught is experienced. The stream emerges from the desk in front of the member and drifts over his head. At his feet there is a small electric heater which can be switched on if desired. Thus the system is designed to keep the members' heads cool and their feet warm—a condition which is understood to be the exact opposite of what usually exists in representative bodies.

Another unique ventilation equipment recently installed in London is at a large film studio. The frequent occurrence of fog and the still more frequent tendency to haze in the atmosphere causes great expense and delay in the taking of film pictures in London studios. In order to ensure continuous working an automatic system of warming and damping the atmosphere of the building was designed. All the air entering the studio is washed, filtered, and warmed; and the control is so arranged that whatever change of temperature or condition of the outside air takes place the inside air is altered in such a way that no fog is produced. The control is so delicate that even the switching on of one or two lamps in the studio meets with an immediate response by the automatic plant. An endeavour is now being made to remove from the incoming air various gases which are contained in a London fog. These gases have no effect on the photographs taken, but they cause headache and lassitude among the performers. It is claimed that this apparatus solves the problem of continuous film production in Great Britain.

SIMMER & JACK PROPRIETARY MINES.

Report for the Quarter ended 31st December, 1921.

The development footage accomplished during the quarter amounted to 1,324 feet. Tons milled, 179,200 tons; total yield in fine gold, 42,776.264 ounces; revenue from gold, £212,965 10s. 7d.; working expenditure, £195,612 9s. 6d.; working profit, £17,353 1s. 1d. Sundry revenue debit), £244 3s. 9d.; total profit, £17,108 17s. 4d. Less expenditure on renewals, £1,685 18s.; estimated net profit, £15,422 19s. 4d. Gold in reserve, 1,200 fine ounces. Amount spent on capital account during the quarter was £4,066 4s. 4d. General remarks:—Value of gold: The value of gold per fine ounce, less cost of realisation, during the quarter was taken at 102s. 6d. for October, 101s. 6d. for November, and at 95s. for December, 1921, or an average of 99s. 9d. per fine ounce, as compared with 110s. 6d. per fine ounce for the previous quarter. Premium on gold: The profit for the quarter allows for a deduction of £672 10s. 3d., which represents the amount by which the estimated realisations, as contained in the monthly reports for the previous quarter, have exceeded the receipts on account of premium up to and including the settlement at 30th September, 1921. Native labour: The average number of natives employed was 4,352, as compared withw 4,032 for the previous quarter. General: The decreased estimated realisation per fine ounce as compared with the realisations for the previous quarter has affected the revenues of this company by £23,000 for the quarter. Strike: Since the 10th January, 1922, the company's works have been closed down owing to a general strike of workmen employed on the gold and coal mines, and on the works of the Victoria Falls and Transvaal Power Company, Limited.

CHARCOAL

FOR

Suction Gas Producers

and other purposes.

PRICE **£3 : 10 : 0** PER TON
F.O.R. SEVENOAKS.

Bags charged at cost price and credited in full on return.

WOOD TAR

SUITABLE FOR ALL PURPOSES.
PACKED TO SUIT CUSTOMERS' REQUIREMENTS.
Prices F.O.R. SEVENOAKS.

1 GAL. .... 4 -: 4 GALL.	£ 0 15 0
40 ,, (including £2 for Drum)	£ 9 10 0
90 ,, (,, £3 ,, ,,)	£18 15 0

(Drums will be credited in full on return).

Manufactured by: –

WOOD CHEMICALS (S.A.) LTD.
2, HILL'S COURT, SMITH STREET, DURBAN.
also Manufacturers of
METHYL ALCOHOL PITCH, CRUDE CREOSOTE.

EXPLOSIVES
FUSE
DETONATORS
ACIDS
CHEMICAL PRODUCTS
SHEEP DIP
CATTLE DIP

ETC., ETC.

CAPE EXPLOSIVES WORKS, Ltd.
P.O. DYNAMITE FACTORY,
SOMERSET WEST, C.P.

PRICE'S CANDLES
(Made in South Africa)
FOR
MINING
AND
GENERAL USE
Burn Brightly & Economically
PRICE'S (South Africa) LIMITED
FACTORIES: CAPE TOWN & JOHANNESBURG
HEAD OFFICE: BATTERSEA LONDON

RAND WATER BOARD.

NOTICE No. 108.

ASSISTANT STATION ENGINEER.

Applications are invited for the post of Assistant Station Engineer at the Zwartkoppes Pumping Station near Johannesburg.

Applicants must possess a Union Government Mechanical and/or Electrical Certificate of Competency.

The commencing salary is £42 10s. per month, increasing by annual increments of £2 10s. per month to a maximum of £50 per month, plus a cost of living allowance which is subject to revision from time to time, with free house, fuel, light and water.

Applications, stating age, training, experience, whether married or single, accompanied by copies of not more than three recent testimonials, are to be addressed to the Chief Engineer, Rand Water Board, P.O. Box 1703, Johannesburg, and sent in not later than noon on Friday, 10th March, 1922.

Personal canvassing for appointments in the gift of the Board is strictly prohibited. Proof thereof shall disqualify a candidate for appointment.

W. INGHAM,
M.Inst.C.E., M.I.Mech.E.,
Chief Engineer.

Johannesburg,
27th February, 1922

The Government and the Strike.
"Bolshevik Diamonds."

The South African
Mining & Engineering Journal
THE ONLY WEEKLY MINING PAPER IN THE CONTINENT OF AFRICA.
Established 1891.

Vol. XXXII., Part II JOHANNESBURG, TRANSVAAL, SATURDAY, MARCH 11, 1922. No. 1589.

The Premier Diamond Mine "Carries On!"

Despite the débacle in the diamond market, the Premier Diamond Mine is still, owing to certain legal restrictions, working, though on the lowest possible scale, short of shutting down. The above photo, recently taken, shows Mr. D. McHardy, the General Manager, extracts from whose report appear in this issue. In order doubtless to ensure the fullest measure of co-operation in production, two additional Directors of De Beers have been elected to the Board of the Premier.

SIEMENS BROTHERS

& CO., LIMITED

CABLES AND ACCESSORIES

TELEGRAPH
MANUAL TELEPHONES
AUTOMATIC TELEPHONES
SIGNALLING APPARATUS

OVERHEAD LINE EQUIPMENT

PRIMARY CELLS
&c., &c.

Representatives in South Africa:

A. J. G. SIMPSON, A.M.I.E.E.
African Life Buildings, 85, St. George's St.,
CAPE TOWN.
P.O. Box 239, Cape Town. Telephone 1202 Central.

G. H. B. BERNARD, A.M.I.E.E.
9-10, Cotts Buildings, Rissik and Fox Sts.,
JOHANNESBURG.
P. O. Box 7404, Johannesburg. Telephone 408 Central.

Telegrams : "SIEMENS."

The Week's Strike Developments in Brief.

MUCH RIOTING—THE CHAMBER'S REPLY.

Saturday, March 4th.

The Augmented Executive of the S.A.I.F. wrote to the Chamber of Mines asking that the Chamber convene a meeting representative of the employers affected by the present strike to meet representatives of the Executive for the purpose of discussing possible terms upon which the strike might be declared off.

Everything pointed to a return to work on a large scale.

Sunday, March 5th.

There was considerable speculation as to whether another ballot would be taken or a general strike called.

Monday, March 6th.

The return to work movement enjoyed something of a boom. Some three hundred men made application to get back to mine jobs early in the morning. Others filtered trough during the day. Many were taken back, and thus a considerable quota is now working solidly in the endeavour to restart the industry.

Improved barricades on the Mines to defend the Police, who are attempting to protect those who are returning to work.

The whites employed on the mines are at present in the neighbourhood of 5,000. These, with an extended emergency ratio of white to black, such as is being worked, temporarily, represent a very effective force.

The Joint Executives declared a general strike. There was considerable rioting at Fordsburg.

Tuesday, March 7th.

There was a meagre response to the General Strike Proclamation except where intimidation methods were resorted to. There was considerable street rioting and a few conflicts with the police. The volunteers at the Power Station continued to supply the town with a good service of light.

Wednesday, March 8th.

Continuation of street rioting and lawlessness on the Reef.

The Chamber's Reply.

The Chamber, in their reply dated March 1, stated *inter alia*:—

The General Secretary,
South African Industrial Federation,
Johannesburg.

Dear Sir,—The Chamber is in receipt of your request to-day that it shall again take part in a conference with representatives of your Federation with regard to the strike. Your letter does not state that your representatives have any proposals or suggestions to bring forward, but indicates that what is desired is merely a continuation of previous discussions.

Such a conference would obviously be futile; nor in the opinion of the Chamber is there anything to be gained by further discussions with the Federation. A fortnight was wasted in such discussions immediately after the beginning of the strike; and at the end of that time it was evident that, in spite of the full and convincing case brought forward by the Chamber, the representatives of the Federation were either incompetent or unwilling to grasp even the elementary fact that the industry was in a very critical position. Far less had they any remedy to propose. The Chamber will not waste further time in attempting to convince persons of that mental calibre.

The urgent necessity now is not to hold debating society meetings, but to get the mines working without delay. The Chamber's original proposals would have kept them working, but the Federation preferred to force a strike.

The terms upon which the Chamber is ready to take on employees were stated in the Press on January 29 last; and, although they were repeated as recently as last Wednesday, it may be well to state them again. They are:—

(1) The fixing of an average ratio of 1 European to 10.5 coloured over the producing mines for a period of two years, the industry to be at liberty within that ratio to make such arrangements and alterations of its conditions of work as it thinks fit, subject always to the Mining Regulations and to the existing agreements with regard to working hours and basic wages.

(2) That, subject to the right to reorganise work provided under (1) above, men employed after the strike be taken on at December, 1921, daily rates of pay, without the December cost of living addition, but plus one-half of the cost of living addition as at January 1, 1922, the reduced addition to continue till June 30, 1922, and then to disappear entirely.

Note.—The December, 1921, daily rates of pay mentioned above are, of course, the December rates laid down in the various agreements for the particular jobs.

(3) That May Day and Dingaan's Day be no longer paid holidays on the mines.

Still Open To-day.

These terms were expressly stated to be the minimum upon which the mines could reopen; and it was pointed out that, so far from there being any hope that further concessions would be made by the Chamber, any long continuance of the strike would probably render it impossible for the Chamber to offer terms so favourable to the men. Those terms have been open for over a month, and they are still open to-day, but the Chamber gives no undertaking that they will be open to-morrow.

Further, the Chamber will not in future recognise the South African Industrial Federation for any purpose. Whatever may have been the case in the past, when the Federation was under different control, it is evident that it no longer

WANTED.

Miner for S.W. Protectorate with experience of Tin; apply with references, Box 254, East London.

[illegible] the staff of the employers in the gold and coal [illegible] at the instance of the Federation, [illegible] could [illegible] Industrial [illegible] If the Federation [illegible] which it has [illegible] it will [illegible] with the [illegible] of the Chamber are occupied with the winning of coal or gold, and they see no reason why they should discuss the [illegible] with representatives of [illegible] men.

"The Dangerous Junta."

In deciding no longer to deal with the Federation, the Chamber is convinced that it is acting in the interests of the workers themselves and assisting them in their evident desire to get rid of the dangerous junta which has brought them to the present pass. And the Chamber will continue to assist them in the future against any such vindictive action as was threatened by the president of the Federation at Germiston yesterday in connection with men who return to work.

The Chamber desires to make it clear that its refusal to have any further dealings with the South African Industrial Federation does not imply that it will no longer recognise unions really representative of those trades from which its own employees are mainly drawn. Such recognition has for years formed a part of the Chamber's policy; and it will shortly address to the unions concerned a statement of the conditions upon which that recognition will be continued.

W. GEMMILL,
Actuary and Labour Adviser.

The Bailey Group.

QUARTERLY REPORTS.

South African Coal Estates (Witbank), Limited.

The report of operations for the quarter ended 31st December, 1921, is as follows:—Output, 186,136 tons; estimated profits, £18,500. Cassel Section (Landau): Work proceeding in a very satisfactory manner, output has been well maintained. Navigation Section (Bailey Shaft): Development proceeding very well and opening out good coal. Navigation Shaft: Underground conditions continue good and development is proceeding satisfactorily.

Leeuwpoort (African Farms) Tin Mines, Limited.

The report of operations for the quarter ended 31st December, 1921, is as follows:—During the quarter 3,706 tons of ore were milled and 4,558 tons of tailings treated, resulting in the recovery of 85 tons of concentrates of an average grade of 50 per cent.

McCreedy Tins (Swaziland), Ltd.

The report of operations for the quarter ended 31st December, 1921, is as follows:—Operations still suspended. Although recently the price of tin has advanced, it is considered by the Board that conditions do not yet display the stability necessary to order the resumption of sluicing.

Theron Diamonds, Limited.

The report of operations for the quarter ended 31st December, 1921, is as follows:—Further to the 52,845 loads reported last quarter as floored, nothing has been done.

Rezende Mines, Limited.

The report for the quarter ended 31st December, 1921, is as follows:—No shaft sinking was done during the quarter, but the circular shaft was equipped to the 8th level. The development footage for the quarter amounted to 1,147 ft. Tonnage mined, 19,314; waste sorted, 8.6 per cent.; tonnage milled, 17,650; total yield, 8,459.46 fine ounces; total yield per ton, 9.58 dwts. Working revenue (including £6,700 from premium reserve), £43,159 17s. 10d., 48/10.875 per ton milled; working costs, £25,833 18s. 2d., 29/3.282 per ton milled; working profit, £17,325 19s. 8d., 19/7.593 per ton milled, sundry revenue, £618 8s. 8d.; total profit, £17,944 8s. 4d. Capital expenditure during the quarter amounted to £2,150, excluding development. General Remarks. The number of natives under engagement at the end of the quarter was 1,015. The crosscut from the circular shaft at the 8th level has cut the footwall reef, averaging 16 dwts. per ton over 15 inches, and the crosscut being continued has since cut the hanging wall reef, averaging 5.2 dwts. per ton over 60 inches. Driving on the footwall reef is proceeding.

The Bantjes' Position.

In the course of their annual report the directors of the Bantjes state: "It was intimated in the last annual report of the directors and at the ordinary general meeting held on the 27th May, 1921, that, notwithstanding the unfavourable results encountered in the 11th level west drive from the Consolidated Main Reef property, your Board had decided to continue driving for a further 500 feet beyond the dyke which had then been passed through, in order to prove a further portion of the very large claim area situated below the existing mine workings. It was also stated that should the results prove unsatisfactory and the Board be of opinion that there was no longer any hope of procuring payable values, shareholders would be called together to consider the question of placing the company in voluntary liquidation. The 500 feet of driving west of the dyke has now been accomplished without any tangible result. Particulars of driving are given in the report of the consulting engineer. The total footage driven from your company's eastern boundary is 2,271 feet, the average disclosures over a distance of 1,195 feet on reef being 20.8 dwt. over 6 inches, or 125 inch-dwt. In view of these unsatisfactory results and the consulting engineer's recommendation that the work in the drive should cease, your directors have given the matter full consideration and are satisfied that there is no hope of discovering payable values. They also endorse the opinion of the consulting engineer that any attempt to re-open the mine (which was closed down at the end of 1918) for the purpose of working the small remaining ore reserve is not warranted, owing to the heavy expenditure which would be involved in de-watering the mine and the general re-conditioning of the plant. The directors have accordingly decided to discontinue the drive referred to, and to call extraordinary general meetings of shareholders to consider the question of placing the company in voluntary liquidation. The Board's decision, as above stated, was communicated to shareholders by circular dated 16th January, 1922, and enclosed will be found notices convening the ordinary annual general meeting to be held on 5th May, as well as extraordinary general meetings to be held on the 5th and 27th May, 1922, at which latter meetings resolutions placing the company in voluntary liquidation will be submitted. Should you be unable to attend these meetings, you are requested to be good enough to complete the accompanying forms of proxy and return them to the transfer secretary as directed thereon. The position and prospects of the company have received the most earnest consideration of the directors, who being firmly of opinion that no good purpose would be served by attempting to resume mining operations, have no hesitation in recommending to shareholders that the company be placed in voluntary liquidation; consequently any proxies executed by shareholders in favour of directors will be used in favour of adopting that course, unless the contrary be indicated on the proxies or by letter."

Iron Ores in Uganda.

According to the first annual report of the Geological Department, Uganda Protectorate, for the year ended March 31, 1920, iron ores of various kinds are abundant in the Protectorate; those of average grade such as limonite are of extremely wide occurrence. Both ferric and ferrous oxides exist in the surface soils of most districts. The peroxide present in many rocks suffers oxidation and hydration, and thereby, owing to an increase in bulk consequent upon the molecular change, loosens the sub-soil and turns it into the common red earth so characteristic of the country. When, however, the peroxide is again produced by the action of organic substances in solution a red colour very generally remains. Another hydrous peroxide of iron of common occurrence is goethite. It is usually found in association with certain postargillite quartz reefs, and generally results from the decomposition of hematite or of pyrites. It is worthy of remark that goethite, which might almost be classed as a rare mineral in Britain, is very common in Uganda. It is worked as an ore of the metal in some countries. Limonite is frequently concentrated in the surface laterites, and other detrital deposits, giving them a slaggy appearance. Surface ores such as these are often worked by the natives of this Protectorate.

Apart from these ores, however, others of economic importance are known; hematite and magnetite are locally abundant. It is a curious fact that the hematite of this country nearly always contains a greater or smaller proportion of magnetite. Martite (probably a pseudomorph in hematite after magnetite) is known to occur, but is not known to be worked; on the other hand, turgite occurs in the Northern and Eastern Provinces, and is worked in both. Magnetite in more or less shapeless masses is found in some pegmatites, and is extremely common as scattered octahedra in the lavas of the Mount Elgon series, and may be obtained in quantity from some of the alluvials derived therefrom. Apart from an occurrence discovered immediately after the close of the financial year 1919-1920, the best magnetites as yet known are found in certain quartzites associated with the crystalline rocks of the Archæan.

Hematite occurs under precisely similar conditions, and is a good deal more common than magnetite, while hematite-magnetite and magnetite-hematite-limonite ores (often with goethite) occur similarly. Hematiferous argillites are known, more especially in the western parts of the Protectorate, while in the Kigezi district some fine hematite-magnitite schists occur, as do massive hematite-magnetite ores.

The iron ores of the quartzites are usually irregular and patchy, and while some are to be regarded as bedded deposits, others are of the nature of fissure ores filling in the joints and cracks of the main rock. They are commonly of the nature of magnetite. Hematites, often resembling them in general appearance, are known in quartz-hematite reefs, which cut the argillites in some places.

The abundance of iron ores in Uganda has attracted the notice of most explorers, that of Emin Pasha among them. It is difficult to say which district produces the best iron, but Kigezi must take a high place. The blacksmiths of that part are an exclusive caste. They carry on a considerable trade with the country to the south and west, and also with their immediate neighbours on the east.

The collection of ore for native furnaces is primitive, and usually takes the form of simple surfacing. In Bunyoro, however, a certain amount of tunnelling is undertaken. On the discovery of likely indications a small shaft is sunk some 20 ft. or so below the surface of the ground and through the superficial deposits until the ore (the weathered cap of a hematite lode or some kind of bedded deposit) is struck. The shaft is continued into this, and short tunnels of small dimensions are driven out in various directions from the bottom of the shaft into the ore, which is thereby dug and subsequently extracted. No timbering is used, as the lateritic earth above the ore stands very well, as does the ore itself.

The system of melting iron, and sometimes of smelting small quantities of ore, common to a good deal of Central Africa, is described by Sir Harry Johnston. Charcoal is invariably used for fuel, and as a reducing agent.

Except in the Masaka and Mubendi districts no smelting from ore is done in the Buganda Province. The Buganda smiths merely melt up scrap and beat it out afresh. There is plenty of evidence, however, to show that ore-smelting was more widely practised in bygone days. In Lango, again, in the Eastern Province, ore-smelting is only done by Bunyoro people at one spot, Kagaga Hill. The Lango people themselves never use ore and only melt up scrap for the purpose of making personal ornaments and charms. They purchase all their tools from the Banyoro. The case of Busago (Eastern Province) is similar to that of the Entebbe and Mengo districts of Buganda.

An Electrical Jubilee.

Early this year the British Institution of Electrical Engineers commemorated the 50th anniversary of its foundation, originally under the name of the Society of Telegraph Engineers. The occasion was celebrated by a number of discourses from prominent British engineers and by a lecture on "Michael Faraday and the Foundations of Electrical Engineering." Faraday was the father of the electrical industry, his experiments at the Royal Institution in London having laid the foundation upon which the dynamo and all other electrical machines have been designed and constructed.

The most disastrous strike in the history of South Africa has been precipitated by the action of a few shallow extremists, incapable of constructive suggestion and competent only to destroy. They are the same people who have utilised the full recognition of trades unions by the Chamber in 1915 to undermine discipline on the mines and to destroy efficiency. By a policy of irritating interference, sectional strikes, and flouting of managerial authority, they have deliberately attempted to cripple the country's chief industry. Can it be wondered at that the gold mines are determined to be, like other industries, masters in their own house and no longer at the mercy of irresponsible demagogues?

ASBESTOS
PROPERTIES and FIBRE
ARE PURCHASED BY
AFRICAN ASBESTOS MINING CO., LTD.
P.O. Box 504, BULAWAYO
Telegrams: "Safasco," Bulawayo 'Phone No. 356
Johannesburg Correspondents:—HUGGINS & CO., LTD.
Consolidated Building ———— JOHANNESBURG
Telegrams: "Turbros" P.O. Box 5105 'Phone 574

BELL'S UNITED ASBESTOS (Lond.)

AFRICAN AGENCY, LIMITED,

Telephone No. 345, Central. 24-26, CHORLTON CHAMBERS, HARRISON ST., JOHANNESBURG. P.O. Box 2642.

SOLE AGENTS IN SOUTH AFRICA FOR

BELL'S UNITED ASBESTOS CO., LTD., LONDON.

(OLDEST ASBESTOS MANUFACTURERS IN THE WORLD).

VIEW OF GENERAL ABESTOS WORKS, HAREFIELD, MIDDLESEX.

"GLADIATOR" ASBESTOS CEMENT BUILDING MATERIALS.

Over 170 million square feet "Gladiator" Building Material supplied the British Government during the War for Army Hutments, Hospitals, Aerodromes, Munition Factories and the like.—Enquiries invited.

WAKEFIELD'S

HIGH-CLASS LUBRICANTS.

The Economy of Paying a Higher Price.

Were we to assert that we could get a good satisfactory engineering job at a low price or that a cheap machine is as good and will do equally good work and be as economical as a first class one,
What would you say or think?

Why not be your own Judge?

Put WAKEFIELD'S LUBRICATING OIL to the test. If a gallon goes further, gives better working results and reduces danger of breakdown, your very pride in your work will decide the matter apart from all selling talk.

TRUE CHEAPNESS IS DECIDED BY THE AMOUNT AND QUALITY OF THE WORK DONE.

S.A. Representative: WM. CAMPBELL, BOX 1814, JOHANNESBURG. 'Phone 5198.

Sales Agents, Transvaal and Natal:

MARTYN & BELL,

2, Allkin House,
Corner Marshall and Harrison Sts.,
Box 3181. 'Phone 1913. JOHANNESBURG.

2, National Bank Chambers,
West Street,
Box 718. DURBAN. 'Phone 1303

More Points from the Premier Annual Reports.

COMPETITION FROM "BOLSHEVIK DIAMONDS"—GENERAL MANAGER'S REPORT—DIAMOND VALUATION PRACTICE.

The extracts from the speech of Mr. Ross Frames, who presided at the annual meeting of the Premier D.M. Co., Ltd., last week, may usefully be supplemented by some further extracts from the acting chairman's speech and from the report of the general manager. An important point made by the acting chairman in the course of his speech was the explanation of the method followed by the company in valuing its diamonds.

Valuation of Diamonds.

In regard to this, Mr. Ross Frames said: "Perhaps it will be convenient at this point to explain the practice that has always been followed by this company in framing Table No. 1, published with the accounts (recently reproduced in the *South African Mining and Engineering Journal*). To find the value per carat, the total amount received for diamonds sold is divided by the total quantity of diamonds recovered during the year, so that it frequently happens, and it is the case this year, that unsold diamonds constitute portion of the divisor, with the result that the value so ascertained is below the true market price. It is almost impossible, at this date, to alter the practice without throwing overboard all the figures for previous years, where a stock has been on hand at the end of such years. Any way the present practice is quite consistent with the valuation of the stock at one shilling."

The Year's Operations.

In dealing with the operations for the year, Mr. Ross Frames added:—"The number of loads treated was considerably less than half of that of previous years, since 1916, when mining operations were resumed, but it is satisfactory to find that an improvement has taken place in the yield per load, probably due to the reason given in the general manager's report. The scale of operations at present being carried on at the mine is the lowest possible short of shutting down, but it is not competent for the company under the law to suspend operations entirely under existing circumstances. The trading fund was created with the object of meeting conditions such as prevail at present. When the smash came in the diamond market, this company, unlike other great producers, had practically no stock of diamonds on hand, and as the Board was anxious not to add to the distress, caused through unemployment, operations were continued on a reduced scale, and the employees longest in the service of the company were retained. Since then it has become necessary to curtail the company's activities to a further extent."

Sale of Diamonds.

In the course of their report the directors state:—"Towards the end of the financial year 1919-1920 the demand for diamonds slackened considerably, and since then has become worse, so that to-day the small demand is being met by the "Bolshevik diamonds" and the output of others than the four conference producers. The revenue from diamonds for the year ending October 31st, 1921, was only £439,636 as against £2,098,482 for the previous year."

The General Manager's Report.

Mr. D. McHardy, the general manager, writes, *inter alia*:—"Mining and washing operations were restricted to two shifts of eight hours each, per diem, from the 1st November, 1920, to the 27th February, 1921, and, thereafter, to one shift per diem until the 30th June, when all productive work was further curtailed to five shifts per week. In view of the abnormal conditions which have obtained, comparisons with previous financial periods are rendered valueless, and it will, therefore, suffice to add that the quantity of blue ground washed, and the recovery is less by 2,706,268 loads and 408,583 carats respectively, than the corresponding figures for the preceding year. Mining has been confined, practically, to the working faces above the 410 ft. level in the several sections of the pipe area, and, in this connection, it may be mentioned that the quantities of ground shown as having been drawn from the 360 and 410 ft. levels include a considerable percentage of "blue" from levels nearer the surface of the mine which, for various reasons, were not entirely worked out before, especially in the vicinity of the rim rock, and this is a factor which has probably had a favourable bearing on the yield as reflected in the higher average recorded for the period under review.

Working Costs.

"In comparison with the previous year, the total working expenditure at the mine shows a decrease of £303,553, but the average cost per load mined and washed is 8.310d. higher, due to the restricted scale of operations, and to the fact that certain standing charges could not be proportionately reduced. Further, the gratuities paid to the employees who were retrenched, amounting to £8,231, also added appreciably to the cost of operations.

Hauling and Washing Plants.

"The hauling and washing plants at present in use have worked satisfactorily throughout the year and have been maintained in a good state of repair. No work has been done towards the completion of the No. 4 Gear since the date of my last annual report, and, as far as possible, the orders placed overseas for the machinery required to effect the necessary replacements have been cancelled. The reconstruction of this plant is well advanced, however, and with the material already on hand a section could be brought into commission with comparatively little delay.

Development.

"In consequence of the reduction of operations, and the fact that the development of the mine generally was well ahead of requirements at the close of the preceding year, very little work has since been done under this heading beyond the development of additional working faces below the 360 ft. level in the central section of the mine. The quantity of blue ground available above the lowest level so far developed, namely, 460 ft., is 39,000,000 loads, of which 25,000,000 loads are contained in the working faces above the 410 ft. level. The average depth of the mine is 294 feet, an increase of 6 feet for the year."

The disastrous losses inflicted by the machinations of the S.A.I.F., not only on the gold mines, but also on the farmers, the merchants and the working classes of South Africa, make a formidable indictment of the South African Industrial Federation's policy. On the other hand, the Chamber of Mines has met them with patience, forbearance, and confidence in the justice of its case, knowing that the steady fall in the price which the mines are obtaining for their gold has imposed on it the stern necessity of making drastic reductions in expenditure.

GOVERNMENT EXAMINATIONS.
METAL. RESULTS, 1921. COAL.

Total METAL MANAGERS Certificates	
Granted in S.A., 1921	36
Secured by Students of Messrs. LUCAS & WOLFE ..	21
Balance for S.A. .	15
7 COAL MANAGERS Certificates obtained in 1921.	
Total OVERSEERS Certificates (Metal and Coal)	
Granted in S.A., 1921	61
Secured by Students of Messrs. LUCAS & WOLFE ..	25
Balance for S.A.	26
Total SURVEY Certificates	
Granted in S.A., 1921 .. .	11
Secured by Students of Messrs. LUCAS & WOLFE	9
Balance for S.A. .. .	2

C. D. LUCAS & B. E. WOLFE,
MINING ENGINEERS
OFFICES & LECTURE ROOMS: PERMANENT BUILDINGS.
Postal Address Box 6301. JOHANNESBURG

GARGOYLE

Lubricants

"*A grade for each type of service*"

Production's Sly Enemy

FRICTION—

the unseen enemy of production in your plant.

IF FRICTION COULD SPEAK, it would confess "I am robbing you of power, of production, of profit."

If your machines were human, they would tell you that friction is pain—and pain is the forerunner of trouble.

What will guard you against wasteful friction? Correct lubrication—and that only. The subject is well worth your most serious thought.

We are in a position to reduce the wear and tear on your machinery—to reduce power waste and so increase your useable power.

This increased power means increased production without added power cost. It means improved profit. It will protect your pocket-book from friction theft.

We can bring to bear on your plant the most complete fund of lubricating experience in existence. It embraces thorough engineering knowledge and wide practical experience.

We suggest you get in touch with our nearest branch

VACUUM OIL COMPANY OF S.A. LIMITED

Cape Town Johannesburg Pretoria Kimberley Bloemfontein
Mossel Bay Port Elizabeth East London Durban Lourenco Marq u

REID BROS.

(S.A.), LIMITED.

Sole Agents for:

CARRON COY.—HAULAGE GEARS, Etc.
ANDERSON, BOYES & COY.—ELECTRIC COAL CUTTERS.
HARDY PATENT PICK COY.—"HARDIAX" AIR COAL CUTTERS.
BLANTYRE ENGINEERING COY.—SCREENING PLANT.
WM. ARNOTT & CO.—CORNISH AND LANCASHIRE BOILERS.
QUASI-ARC ELECTRIC WELDING APPARATUS.
SMALL & PARKES—BELTING, PACKING, Etc.
FINNEY PATENT HAND PUMPS.
WELDLESS STEEL CHAINS.
CHAPMAN DOUBLE BALL BEARINGS.

JOHANNESBURG.

P.O. Box 802 'Phones 6070/1

AND AT DURBAN.

MILLAR DENNIS
ORIGINAL MAKERS OF

"BRADFORD INVERTED"

PLUG COCKS.

SOLE AGENTS:

GEO. CRADOCK
AND CO. (S.A.), LTD.
75-77, CULLINAN BUILDINGS.

P.O. Box 316. Telephone 539.
Tel. Add.: "ROPES."
JOHANNESBURG.

The South African Mining and Engineering Journal.

HEAD OFFICE: 176-180 Stock Exchange Buildings (2nd Floor), Fox Street, JOHANNESBURG, Union of South Africa.

Telephone **913**. P.O. Boxes **963** and **4573**.

Cables and Telegraphic Address: "MINING JOURNAL"

ANNUAL SUBSCRIPTION RATES: Oversea, £2; Union of South Africa and Rhodesia, £1 10s.; Local Delivery (Town only), £1 6s., payable in advance.

AGENTS FOR GREAT BRITAIN AND AMERICA: Argus South African Newspapers, Ltd., Byron House, 82-85, Fleet Street, London, E.C. 4.

Copies of this Journal are obtainable at all Branches and Agencies of the Central News Agency, Ltd., at all News Agents and Railway Bookstalls throughout South Africa, and at the London Agency as above.

CONTENTS

PAGE
The Week's Strike Developments in Brief 937
The Bailey Group 938
Iron Ores in Uganda 939
More Points from the Premier 941
Editorial:
The Government, the Chamber of Mines, and the Strike 943
Collieries and the Strike 944
Finance and Information for Investors 947
The Sharemarket 949
Engineering Section:
Broken Tools 950
The General Electric Company 951
A Useful Adjunct to Turbine Plants 952
Trade and Industries Section:
The Week in the Mining Material and Engineering Trades 953

EDITORIAL.

THE GOVERNMENT, THE CHAMBER OF MINES AND THE STRIKE.

The strike on the Rand gold mines, power stations and engineering shops has now lasted for two months, and that it has brought incalculable damage to Johannesburg, the Reef, and the whole of South Africa is a matter of such poignant fact that no good purpose can be served by enlarging upon the economic ruin that trades union action is bringing to the major industry of the country. Neither need we labour the point that the reputation of South African mining is suffering severely in the eyes of investors.

The coal "strike" has in the estimate of the Labour leaders now lasted for nine weeks. But in point of fact there is no strike at all, but a severe condition of unemployment in the Witbank district. There has been a rush back to work on the coal fields, and elsewhere in this issue we give some figures culled from the returns furnished by the Government Department of Mines which throw some interesting light on the efficiency of European mine labour in South Africa and on the ability of the mines to dispense with a great deal of that labour.

A similar back-to-work movement on a large scale on the Rand was foreshadowed at the end of last week. Already more than a thousand men have returned to their jobs and these with the mine staffs bring the total number of Europeans employed on the Rand up to over 5,000. The managements of the mines are making superhuman efforts to resume mining operations, as the Prime Minister requested them to do in the interests of the whole country after the South African Industrial Federation had refused an important concession offered through the medium of the Government.

We feel quite convinced that the mine managements will succeed in their efforts and that as a result of this dispute the question arises whether the mines belong to the shareholders who have invested their money in them or whether they belong to a capricious set of industrial pirates masquerading under various trades union disguises will be definitely settled. And when that dispute has been settled the whole country should realise that the railways and other Government services, the agricultural industry and all other industries in every part of the country will owe a vast debt of gratitude to the Chamber of Mines, as representing the largest private employers of labour in the Union, for its determined efforts to break an economic conspiracy, which, had it succeeded, would have ruined South Africa. There can be no doubt about it that if the South African Industrial Federation and its dangerous political and anarchical adherents succeeded in imposing their will upon the Chamber they would very soon be pointing pistols at the heads of every farmer, shopkeeper, and industrialist in South Africa.

But this movement will not succeed. It has broken down at the first and biggest buttress. The return-to-work movement has been temporarily arrested, but we feel sure that the check is but momentary. The drift has doubtless been influenced by the new tactics of the Augmented Executive, the Joint Executives, the Council of Direct Action, or whatever name the bureaucracy in charge of the strike rejoices in at the moment. These tactics have included the calling of a General Strike and the intensification of the campaign of intimidation and lawlessness along the Reef.

The General Strike proclamation has met with only a faint-hearted response on the Rand, except where intimidation has achieved what the command of the Trades Hall failed to accomplish. And in other parts of the country it has met with practically no response at all.

The calling of a General Strike is probably the last card of a bad hand. It has, it seems, been played by the extremists as a trump card on the Chamber of Mines' letter to the Federation. We certainly do not regard it as a trump card at all, and we feel sure it will defeat its own object. The Chamber's letter, which stated that the Chamber of Mines would not in future recognise or have any dealings with the Federation, is published elsewhere in this issue of the *Journal*. This letter is a strong and forceful reply to a weak and futile proposition from an organisation which takes no heed of Government facts and figures—such facts and figures merely leave the leaders cold—an organisation which has tried to break down the whole social and economic fabric of South Africa, which has brought incalculable losses to their own deluded followers, to the major industry of the country, and to the whole community.

There is a sharp division of opinion as to the nature and tone of the Chamber of Mines' letter. The Prime Minister has characterised this letter as "deplorable." The *South African Mining and Engineering Journal* does not subscribe to this view. We admit that the tone of the letter is strong and that it contains many home-truths and thrusts which doubtless have annoyed the syndicate of super-socialists who are attempting to overthrow the mining industry and the whole country. What is the use of beating about the bush? Why not call a spade a spade instead of terming it a utensil of value to the horticulturist when dealing with people who do not or will not understand anything outside their own limited scope of anarchical vision?

No, we do not think this letter, which is straightforward, true, and verifiably true in both its context and condemna-

[illegible] [illegible] [illegible] [illegible] in any shape or form is deplorable. But what is "deplorable," [illegible] [illegible] [illegible] of the Government adequately to realise the seriousness of the situation on the Rand and its failure to provide that protection for those desirous of returning to work which was promised. It is "deplorable" that General Smuts, who had so much to say in favour of the proclamation of Martial Law in 1914 is apparently loath to proclaim it to-day until the situation "*develops.*" *Develops into what?* Surely it has developed into the preliminary stages of something approaching civil war already. It is "deplorable" that the two Ministers of the Cabinet who are watching the situation in sleepy old Pretoria do not take up their headquarters on the top of a Johannesburg building and watch the disgraceful lawlessness which is allowed to continue in this town, the chief town of one State of the "Commonwealth of Nations" represented by the British Empire.

It is "*deplorable*" that the coloured people of this town and its environs should be wantonly attacked and assassinated by gangs of hooligans masquerading under the Red Flag. The Government shot down at Bullhoek large numbers of the coloured population for less provocation than was exhibited by the strikers to the criminal [illegible] within sight of Marshall Square and the office of this paper on Wednesday morning. It is "deplorable" that the police and the Union Air Force are not allowed to use stronger weapons than newspaper advertisements when unoffending natives are being murdered and when officials and men desirous of returning to work are being outraged under their very eyes. It is "deplorable" that returned soldiers who fought to "make the world safe for democracy" and whose wives and families are starving are prevented from returning to the work which awaits them by the most outrageous form autocracy masquerading under the garments of democracy that ever existed.

It is "deplorable" that the Imperial Garrisons were ever allowed to leave our shores, and it is "deplorable" that whilst the principal town and chief industry of South Africa are in the hands of anarchy Parliament at Capetown a thousand miles away can find time to discuss the question of whether Burghers who fought in a war of twenty years ago shall be given a sum estimated by the Prime Minister to amount to from fifteen to twenty millions, at a time when the country is galloping towards ruin because of the Government's failure to cope with a situation engineered by a handful of extremists. The reason for all this dilatory weakness is probably to be found in the one word "Politics." But let the Government make no mistake about it that the present ministry will lose many of its adherents if it fails in its task of maintaining law and order on the Rand and of fulfilling the promises made to the mining industry after the Prime Minister asked for a resumption of work.

No doubt in some quarters the tone of this article also will be regarded as "deplorable." But if truth is deplorable it is only deplorable to those who prefer not to listen to the truth. The truth is that Johannesburg is even without bread to-day and that the town and Reef is in a state of absolute nihilism. And yet our legislators at Capetown tell us that all is quiet and that the situation must be allowed to "develop." The one bright spot—and here we are in agreement with the Prime Minister—is that the conduct of the police has been exemplary. They have acted with admirable patience, and to this we would add that the conduct of the mine officials and the natives, too, has been splendid throughout. Police, officials and natives alike have had to pass through a most difficult period, and it is all to their credit that they have stood the test so well.

To the members of the Government we would again say in conclusion that if they cannot grapple with the situation better than they have dealt with it during the past week they will lose many of their adherents, and that instead of criticising letters written by two organisation in a private dispute it is the duty of General Smuts to come here to Johannesburg, where he can watch the situation develop more effectively than he and his Ministers can watch it either in Pretoria or Capetown. And knowing our General Smuts we believe, notwithstanding anything that has been written in this article, that by the time these lines appear in print the Head of the Government, realising the extreme gravity of the situation, will be in this city of dreadful night and murderous day.

COLLIERIES AND THE STRIKE.

The returns issued by the Government Department of Mines for the month of January, 1922, contain much interesting statistical information bearing upon the strike. Particularly informative are the statistics as to the collieries of the Transvaal and the Orange Free State, where the employees were on strike throughout the month. It is interesting to note that the Transvaal pits sold just under 400,000 tons for a value of nearly £120,000 at pit head. The exact figures for December, when the coal miners were not on strike, and for January when the collieries were run by officials and natives, were as under:—

	Tons sold.	Value at Pit's mouth.
December	593,777	£179,930
January	396,109	119,142

The numbers of employees on producing mines in the two months were:—

	Whites.	Natives.
December	997	16,227
January	338	15,786

The figures for the Witbank-Middelburg area are particularly interesting. Comparisons for the two months are as under:—

Producing Mines only.

	Whites. employed.	Natives. employed.	Output. Tons mined.
December	741	11,693	518,471
January	226	11,380	380,239

The tons mined were, of course, subject to sorting, but the figures given above show that with less than one-third of the white complement at work in the preceding month, and with a slightly lesser number of natives, the coal mines in the Witbank area mined over seventy per cent. of the tonnage won in the month immediately preceding the strike. Comment on these figures is unnecessary; but it may be remarked that they seem to indicate that a considerable number of colliers in the Transvaal have been grossly inefficient in the past and that the collieries have been employing more white men than they had need of. And these figures, too, serve to demonstrate the proof of the statement that in the view of the coal mine owners there is no strike, but only a condition of severe unemployment. Of course, in consequence of the strike the collieries have lost valuable contracts, and it is entirely the fault of the men and of the men's leaders that only a limited number of men can be re-engaged.

The policy of the Transvaal Chamber is not only in its own interest, but in that of its employees and of the whole community. The low grade mines, of which so much has been said, are not a class of mine entirely different from the others. Every mine has ore of varying grades, and every mine works as much of its ore as it can work at a profit and no more. Every important reduction in working costs brings into use enormous tonnages of ore which would otherwise be abandoned as worthless; that ore gives employment to Europeans and natives who would otherwise be idle; and those Europeans and natives support out of their earnings agriculture, commerce and industries which, but for them, would never come into existence.

Notes & News.

Glynn's Lydenburg.

The following are the particulars of the output for the month of February, 1922, in respect of the above company:—Tons crushed, 3,770, yielding 1,468 fine ozs.; estimated value of month's output, £6,635; estimated profit for month, £1,498. Note.—The above figures are exclusive of expenditure for the month upon shaft sinking, special development and capital expenditure, amounting to £1,832. The gold output for the month is valued at £4 10s. 6d. per fine oz., after allowing for exchange and realisation charges.

* * *

The Old Ginsberg.

Tributers have taken over the old Ginsberg and Balmoral mines on a lease. During the last year or so Mr. Beatty has been engaged in recovering gold from the surface works, including the old battery sites. This work is now ended, and owing to the fact that investigation has disclosed the presence of a considerable tonnage of payable ore on or near the surface, he has taken in hand the erection of a small stamp and cyanide plant mill to crush the ore. The plant is nearing completion and will be running at an early date. Quite a lot of active work is going on, on both the East and West Rand, by small men or syndicates, and marked success has been met with in the working of abandoned mines both in the recovery of gold from surface dumps—*i.e.*, the two plants, 5-stamp mills, on the Vogelstruis Deep mine and the Ginsberg—as well as from actual mining at the French Rand and the Roodepoort areas.

* * *

The Futility of Strikes.

Speaking at the fifth annual dinner of the Mining Institute of Scotland, in the Grosvenor Restaurant, Glasgow, at the beginning of the month, Sir Adam Nimmo, K.B.E., responding to the toast of "The Mining Industry," said the working men of this country, and he was afraid of every country in the world, were slow to learn that under no circumstances whatever could a strike, either on a small scale or a large scale, ultimately be of any benefit to them or to the community at large. During the period of such a strike colossal losses were made in respect of the wages of the working classes themselves, the markets which were so valuable for industrial life were lost, and in any case it must take an enormously long time before they could possibly recover the ground that had been given up by such a policy.

* * *

Latest Banking Figures.

Despite the discouraging trade and financial position, the latest available banking figures are satisfactory. The total of deposits (fixed, floating, and savings bank) shows a reduction of approximately £11,300,000 during the year, but the downward movement which has been in evidence since early in 1920 was arrested during the last quarter. Totals are as follow:—

	Total deposits.
December 31, 1920	£102,331,940
March 31, 1921	99,570,923
June 30, 1921	91,405,753
September 30, 1921	90,747,977
December 31, 1921	90,997,673

The slight increase in deposits at the end of the year may be taken as a reflex of the improvement in the trade position, as shown in Custom returns, and the better tendency in business in oversea countries. The recent industrial troubles in South Africa, however, and the setback in business which must result from the cessation of work in some of our principal industries are adverse factors.

Advances show a decrease during the year of about £16,000,000, but there was little change during the last quarter, and the proportion of advances to deposits is still very high, at approximately 82 per cent. This does not take into account advances to the Government by the Central Reserve Bank of £2,200,000, which would increase the percentage to 84·7. The following table shows the fluctuations in advance totals during the 12 months:—

	Total advances.	Per cent. of deposits.
December 31, 1920	£91,138,022	89
March 31, 1921	86,355,100	87
June 30, 1921	79,263,799	87
September 30, 1921 ..	75,371,669	83
December 31, 1921	74,913,741	82

Bank notes in circulation at £9,182,579 are £286,598 less than 12 months previously, the falling off in trade and industry naturally resulting in smaller demand for currency. Cash on hand shows little change since the end of September, and the total of £15,528,417 includes gold certificates £5,396,615, and balances with the Central Reserve Bank, £6,518,529.

* * *

Empire Exhibition Mission.

The British Empire Exhibition which is visiting South Africa on behalf of the British Empire Exhibition to be held in London in 1924 at Wembley Park, will shortly visit Johannesburg. The mission consists of the following personnel: Major E. A. Belcher, C.B.E., M.A. (Oxon.), Assistant General Manager, British Empire Exhibition, in charge of the mission; Mr. F. Hiam (Agricultural Advisor); Lt.-Col. A. Christie, C.M.G., D.S.O. (Financial Advisor); Mr. F. W. Bates (Secretary). Under the present arrangements the mission will reach Johannesburg during March. The exact date will be notified in the Press. During their short stay in Johannesburg the members of the British Empire Exhibition are anxious to get in touch with any societies or individuals who are interested in: The plans and general treatment of the Exhibition; the nature and presentation of the exhibits from South Africa; practical methods of developing South Africa's raw materials and increasing inter-imperial trade; questions concerning tropical diseases, both of human being, plants and animals; the development of agriculture; the expansion of forestry; the mineral resources of the Empire; the opportunities given by the British Empire Exhibition for stimulating inter-imperial travel. The mission are also anxious to study the progress made by the various settlement schemes now working. Any further information desired can be obtained on application by telephone to H.M. Senior Trade Commissioner in South Africa, Telephone 3087, Johannesburg; or to Industries Division, Department of Mines and Industries, Telephone 496, Pretoria.

* * *

British Trade Unions against Intimidation.

The uselessness of a Federation of Trades Unions and the necessity in the interests of fair play and justice (upon which in the long run all organisations must depend) of the members of one Union protecting the members of another Union against intimidation were matters which were debated at some length in Cardiff early last month. According to the latest issue of the *Colliery Guardian* to hand by this mail, "The council of the trade union which is creating so much discussion—the South Wales and Monmouthshire Mechanical and Surface Workers' Union—had a meeting in Cardiff on Friday. After considering the position of members of that union working in the Maesteg area where notices have been tendered against non-unionists, it was resolved that if any cases of intimidation of members of the mechanical association took place all the resources of that association would be utilised to protect the members. The union held the first half-yearly conference in Cardiff on Saturday. Mr. J. Rowe (Hirwain) presided, and there were 65 delegates present, said to represent over 8,000 members. Mr. R. Shirkie, of Glasgow, was the chief speaker, and he commented upon the fact that four times had the mechanical workers been wedded to the South Wales Miners' Federation and four times had they broken away. The possibility of combining all unions into one union had been tried many times, but it had been found that this would not work."

EXPLOSIVES
FUSE
DETONATORS
ACIDS
CHEMICAL PRODUCTS
SHEEP DIP
CATTLE DIP
ETC., ETC.

CAPE EXPLOSIVES WORKS, Ltd.
P.O. DYNAMITE FACTORY,
SOMERSET WEST, C.P.

ROBINS "PERFEX" BALANCED SCREENS.

¶ Give favourable results on the fine screening of a variety of materials—Coal, Coke, Fertiliser, Sand and Gravel, Slag, Stone, etc.

¶ They supplement the Robins Rotary Grizzly, and have its characteristics—low power consumption, freedom from vibration, high efficiency and capacity, small headroom.

¶ **Moreover, they have a positive screening action on damp or wet material, and cannot plug up.**

¶ In all these respects they are an improvement over revolving or shaking screens.

For full information address:

ROBINS CONVEYORS (S.A.), Ltd.
(Head Office: Robins Conveying Belt Co., New York, U.S.A.)
Engineers, Founders, Machinists
Conveying & Hoisting Machinery
Materials-Handling Installations and Appliances
50, STELLA BLDGS., RISSIK & NEW STREETS
X 4736, 'PHONE 4182, JOHANNESBURG

Robert Heath & Low Moor, Ltd.,
Sole Manufacturers of
**LOW MOOR
IRON AND RIVETS.**

SPECIALITIES:
COLD BLAST PIG IRON
HAULAGE GEARS
PUMPS
WINDING ENGINES
OVERWINDING GEARS
PIT TUBS
COLLIERY PLANT AND BUILDINGS
AXLES AND FORGINGS
DROP STAMPINGS
CHILLED AND GRAIN ROLLS
CASTINGS UP TO 20 TON EACH

SOLE AGENTS IN SOUTH AFRICA FOR PRODUCTS OF
LOW MOOR WORKS:
SAMUEL OSBORN
(S.A.), LIMITED,
'Phone 4573 JOHANNESBURG. Box 3162.

USE
"PORPOISE"
BRAND
ANTIFRICTION GREASE

Used for years by the majority of Mines all over South Africa.

Manufactured by
South African Lubricants & Chemical Works, Ltd.,
DURBAN & JOHANNESBURG.
Phone 1618, *Johannesburg Branch Office.*

Finance and Information for Investors.

AN EXAMINATION OF BALANCE SHEETS AND REPORTS—DATA FOR SHAREHOLDERS.

In response to the request of numerous readers we have commenced a new feature of the journal. In these pages we shall endeavour to compress reviews and criticisms of balance sheets, to examine Government, Municipal and other loans, to note dividend declarations, to analyse new prospectuses, and to examine the financial results and prospects of mining, commercial and banking companies concerned with trade, industry and finance in the Union and Rhodesia.

NEW FLOTATIONS.

An Asbestos Proposition.

We have received a copy of the prospectus of the "Bilteng" Asbestos Company, Limited. The directors are: Mr. John St. Leger (Chairman), Dr. A. Marius Wilson, Mr. A. J. S. Lewis, Mr. C. Forrest Rigg, J.P., and Mr. Ben Wilson. Secretaries and registered offices: Messrs. Partington & Co., Markham's Buildings, Capetown. The normal capital is £75,000, divided into 75,000 shares of £1 each apportioned as follows:—24,000 shares of £1 each fully paid up to the vendors and promoters as part consideration for the transfer to the company of the asbestos mining interests and contracts now in hand, 6,000 shares cash to vendors and promoters, 45,000 shares of £1 now offered for public subscription; total, 75,000 shares. The public are, therefore, asked to subscribe £51,000 in £1 shares, which are payable as follows:—10s. per share on application, 5s. per share on allotment, and the balance of 5s. per share as and when the directors shall decide that more capital is necessary.

The company is acquiring from the vendors the whole of the vendors asbestos mining interests in the Vukwe Hills, Shabáni district of Southern Rhodesia, which consists of some seven base metal claims of asbestos bearing ground, together with the contracts for fibre now being delivered.

According to the prospectus, the fibre mined is pure white chrysotile asbestos, which equals, in every way, that produced in Canada, the home of the asbestos mining industry. This type of fibre is the best known substance, and is rapidly coming into general use for all electrical and heat insulation, packing material, and for every purpose where a non-conductor of heat is required. The longer fibres are used in the manufacture of fire-proof textiles, belting, yarns, tape, etc., while the shortage of fibres, with cement, form the component parts of building materials, such as roofing sheets, partition boards, tiles, etc., which are fast supplanting the use of corrugated iron and wood throughout the world. Owing to the use of asbestos becoming more and more general every day, the demand for fibre, especially the better classes of white chrysotile, is increasing by leaps and bounds.

The property has been worked by the vendor, who held the contract for the supply of 150 tons of fibre which was sold at £52 per ton and which was mined by contract at £30 per ton. The company have, however, decided it will be better to cancel this contract, as they have reason to believe the fibre can be sold more profitably. With the introduction of plant this figure of £30 could be greatly reduced and the contractor's profit saved by the company working the mine themselves. Even taking the mining cost at £30 per ton, the sale of fibre shows a very handsome profit of over £16 per ton after deducting cost of transport.

The prospectus continues:—The claims have been pronounced to be the best in the vicinity and have been thoroughly prospected, and considerable development work has been done. The company would be able to commence mining operations without any loss of time while the mine was being opened up. All the ground of any consequence round the claims has been secured to the company. The actual development work done on the property consists of five adits of varying lengths and on different levels. All the adits show fibre in considerable quantities, well worth mining. The property mainly consists of two hills, which are both of asbestos-bearing rock. The mining conditions are ideal, a track run up the gully which separates the two hills would tap both, and enable the waste to be dumped out on to the flat by which asbestos-bearing ground would not be covered. A winze has been put down some 50 feet in the gully and shows considerable occurrences of fibre right to the bottom. The property is at present some 65 miles from the railroad, but a railroad to Shabani has been sanctioned, and when completed the property will then only be some 16 miles distant. Transport is easily arranged either by the company themselves or let out on contract. The matter offers no difficulties.

Attached to the prospectus are extracts from a report by the engineer, Mr. W. J. Grant, A.I.M. & M.

Electrification of Railways.

During the month of January considerable public attention was attracted to the question of electrifying our railways, partly as a result of the proposals now being discussed between certain companies and the Ministry of Transport regarding the electrification of some of the London suburban lines, but more especially as a result of the important joint meeting of the Midland branches of the Civil, Mechanical and Electrical Engineers, held at Birmingham on the 20th. That meeting was organised with the object of discussing the electrification of main line as distinct from suburban railways, and was attended by many well-known railway engineers and others intimately interested in the question. From the views expressed in the course of the discussion it is obvious that the opinion of many people, to whose views our best attention should be given, is by no means definitely settled in favour of main line electrification. It was generally agreed that suburban railway electrification was in nearly every case justifiable; but it was admitted that the density of traffic was a decisive factor, and that at present we did not know at what value of the density the advantages of electrification began. One or two speakers urged the view that on this point it would be wrong to take the prevailing density with steam services as the basis of calculation for the electrified services, for, they argued, in nearly every instance of which we had experience, electrification brought increased traffic. One speaker, carrying this argument farther, urged in effect that we should entirely change our outlook when considering electrification; that we should not simply regard it as

MINES DEPT. EXAMS.
CERTIFICATES AWARDED INSTITUTE.

MANAGERS' EXAMS., September, 1921, January, 1922.

We obtained 15 out of a total 22 certificates awarded in South Africa

	Metal	Coal	Totals
Ours	9	6	15
Rest of S A.	4	3	7
		Total for S.A.	22

OVERSEERS' CERTIFICATES (Metal).
So far as we know we have only had 6 failures during 1921, and secured two-thirds of the certificates issued in S.A. during the past two years.

TUITION (Metal or Coal) by class, correspondence or privately
Mining Institute (Prof. Yates),
St. James' Mansions, Eloff St. Johannesburg

[illegible] system for British railways, a distinct preference being expressed for single phase current of high voltage. In general it was agreed that if heavier trains were to be hauled it would be impossible to continue the use of steam locomotives; but on the question of first cost and maintenance expenses opinion was far from being unanimous that the advantages lay with electrification.

The Wit. Deep Dispute.

The following leading article appears in the issue of the Financial Times to hand by this mail:—

Shareholders in the Witwatersrand Deep Company will no doubt have read with indignation the extraordinary state of affairs disclosed by a circular which we reproduce on the opposite page. It appears that last November a private company was formed in South Africa with the title of the Union Mining Finance and Investment Company and an authorised capital of [illegible]. To this concern the Wit. Deep Company has by a majority decision of its Johannesburg Board, three out of eight dissenting, been bound to subscribe £49,000 out of resources which can be by no [illegible] through in such a [illegible] way that apparently even the general body of shareholders in South Africa was not consulted. Certainly those members of the company outside the Dominion, who own altogether over 80 per cent. of the capital, have not been asked to approve of the deal. They have not even received any official information whatever as to it.

In the circumstances, it is not surprising that a meeting of large shareholders recently held in London unanimously appointed a committee of three well-known City men to take every possible measure with a view to "scotching" this supererogatory Finance Company and securing, if practicable, the return of any Wit. Deep moneys which may already have been paid over to it. The circular is signed by these three gentlemen, one of whom has resigned from the London Committee of the Wit. Deep in order to be in a perfectly free position to fight the shareholders' case. The other members of the London Committee of the company are stated to be in complete accord with his policy. Frankly, we regard the action of the majority of the Johannesburg Board as utterly inexcusable. Such a case as they might have been able to put up for it will be automatically pre-judged against them by their arrogant attitude in omitting to consult the general body of shareholders before attempting to commit it to such a speculative venture—one, the objects of which are, according to the independent Committee's circular, of very doubtful legality.

Seemingly the principal pretext for financially supporting the Union Mining Finance and Investment Company was that this enterprise might be enabled to buy from the Union Custodian of Enemy Property 42,000 ex-enemy shares in the Wit. Deep Company. But there was no need for such a roundabout procedure to do this. Since the middle of the War half-a-dozen or more leading Kaffir companies have bought large blocks of their own shares from the Union Custodian and either sold or distributed them to friendly holders. To quote only two instances, it was no further back than 1919 that the Rand Selection Corporation and the Geduld Proprietary Mines bought (with the sanction of the Supreme Court of South Africa) respectively 121,000 and 250,000 of their own individual shares. The Rand Selection Corporation distributed as a dividend eight of the ex-enemy shares on every 100 shares owned by friendly holders. By a coincidence the 42,000 Wit. Deep ex-enemy shares if purchased by the company itself would enable an exactly similar distribution, namely, eight on every 100 now owned. Alternatively, the shares in question could be purchased and cancelled, as is being done in a similar case which has arisen with respect to the South-West Africa Company. There is not the slightest justification that we can see for the fanciful flotation to which the majority of the Wit. Deep Board has attached itself. If these gentlemen wish to operate in Kaffir shares or to take up new ventures no one will have the slightest objection to their doing it with their own money. They have no right to do it with Wit. Deep funds without the considered sanction of the shareholders in general.

We would urge all shareholders who wish to protect their interests to send their proxies as promptly as possible to the independent and responsible Committee which has generously engaged itself to fight the case, without asking for any financial assistance whatever. The Wit. Deep Company, when it was melodramatically emancipated from "Group control" a few years ago, was professedly to be an example of how things should be done on the Rand. In this instance it has given a first-class version of how things should not be done. None of the Kaffir houses, whatever mistakes they may have occasionally made, would ever have so treated their shareholders.

Companies Struck Off.

The following companies have been struck off the list by the Registrar of Companies:—Felix Diamond Syndicate, Limited; Machavie Claims Syndicate, Limited; African Options, Limited; Franco-Colonial Company, Limited; General Agencies, Limited; Caves Alluvial, Limited; Barclay and Company, Limited; African Mining Corporation, Limited; Cassiterites, Limited; Consolidated Agencies, Limited; Orion Diamond Mining Company, Limited; Exports and Imports, Limited; R. Baird Langdon, Limited; The Madagascar Timber and Trading Company, Limited; South African Diamond Cutting Company, Limited; Continental Manufacturers, Limited; Premier Oil (Shale) Syndicate, Limited; Vyfontein Concrete Company, Limited; The Northern Development Syndicate, Limited; Goodrum Building and Cement Works, Limited.

The Low Grade Mines Commission found—

- **That the Witwatersrand gold mines were the sole support of at least a quarter of a million whites and a million natives;**
- **That in every part of South Africa there are people who are more or less directly dependent for their living on the spending power of the money put into circulation by the mines of the Rand;**
- **That as regards the Government revenue, of the total Union General and Railway Revenue of £27,700,000 in 1914, £12,000,000 was traceable to the mines of the Witwatersrand.**

Transvaal Gold Mining Estates.

The following are the particulars of the output for the month of February, 1922, in respect of the above company. Central Mines: Tons crushed 10,900, yielding 3,900 fine ounces. Elandsdrift Mine: Tons crushed, 1,605, yielding 970 fine ounces. Vaalhoek Mine: Tons crushed 1,850, yielding 718 fine ounces. Estimated value of month's output, £25,334; estimated profit for month, £2,908. Note.—The gold output for the month is valued at £4 10s. 6d. per fine ounce net, after allowing for exchange and realisation charges.

The Anglo-Swedish Electric Welding Co., Ltd., Wood Wharf, Greenwich, London, S.E. 10, England, is prepared to negotiate for the use of the Kjellberg Process of Electric Welding in various parts of South Africa, this having proved itself both by independent tests and by results obtained in practice to be unequalled for boiler and general repairs. Only firms who have someone in London to negotiate on their behalf need apply.

The Week in the Sharemarket.

EASINESS AFTER A MARKED IMPROVEMENT—MODDER EASTS BETTER.

After marked firmness and a material improvement in prices, the market eased slightly on the declaration of a general strike, but even this only caused a comparatively slight fall in prices in fact the confidence of investors would appear extraordinary under the present circumstances of mob law. At the same time we think they are justified in such confidence in view of the fact that the present conditions cannot obtain for any lengthy period, and when peace arrives the outcome of the then past trouble must be very beneficial to the mining industry.

	Fri 3rd.	Sat. 4th.	Mon. 6th.	Tues. 7th	Wed. 8th.	Thurs. 9th.
Anglo Am.-Corp.	20 6*	21 6	21 3	20 7	20 1*	20 6
Apex Mines					7 0†	
Bantjes Cons.	6 3*	6 4*	6 3*	6 6*	6 7*	6 7*
Brakpan Mines	44 0†	43 0*	44 0*			
Brick and Potteries						3 0*
British South Africa			11 0*			
Bushveld Tins	0 6*	0 6*	—	0 6*	—	0 6
Cinderella Cons.	1 9b	—		1 9*		1 9*
City and Subs.	2 2*	2 3*	2 3*	2 6†	2 2*	2 3*
City Deeps	40 3*	41 3	41 3*	40 6*	40 0	40 3*
Clydesdale Colls.					20 0*	20 0*
Con. Diamonds	15 6†	16 0b	15 6	15 4*	15 3*	15 3*
Con. Investments	—	21 0*	22 0*	22 0*	22 0*	22 6*
Con. Langlaagtes	12 9*	13 0*	13 0*	13 0*	13 0*	13 0*
Con. Main Reefs	8 0*	8 6	8 9	8 1*	8 7½	8 8*
Con. Mines Select			10 6*	10 6*	10 6*	
Coronation Colls.	28 0*	28 0*	—	29 0*		30 0*
Do. Freeholds				0 7*	0 7*	0 8*
Do. Syndicates	4 6†	4 1*	4 0*	4 3*	4 3*	4 3*
Crown Diamonds	5 3	6 3	6 3	6 1	5 9	5 9*
Crown Mines	33 6*	35 0	35 9*	35 0	34 0*	
Daggafontein Mines	2 7*	2 7*	2 9	2 7*	2 7*	2 7*
E.R. Coals	1 7*	1 7	1 7*	1 7*	1 7*	
E.R. Deeps	0 9*	0 9*	0 9*		0 9*	0 9*
E.R. Props.	4 7*	5 0*	5 0*	5 0*	5 0*	4 9*
East Rand Debs.	£80*	£80*	£80*	£80*	£80*	£80*
Eastern Golds			0 6*		0 6*	
Frand Smith Dmds.	3 8*	3 11	3 11	3 10*	3 11	3 11
Geduld Props.	49 9	51 0	50 3	50 0*	50 3*	50 3*
Glynn's Lydenburgs	7 0*	—	7 0*	7 0*	7 0*	
Govt. Areas	77 6	78 0	78 0	78 3	78 6	78 3*
Hume Pipes	9 0*	10 0*		11 0	10 6*	10 6*
Knight Centrals	4 3	4 3*	4 4	4 3*	4 3*	4 3*
Lace Props.	7 9*	8 0	8 0*	8 0*	8 0*	8 0*
Leeuwpoort Tins	6 9*	6 9*	6 10*	6 9*	6 11*	6 10*
Lydenburg Farms.	5 0†	4 9*	4 9*	4 8*	5 0†	4 8*
Meyer and Charltons	60 0*	—	60 0*	—	—	
Middelvlei Est.	1 0*	—	1 0*	1 0*	1 2*	1 0*
Modder Wests	1 0*	1 0*	1 0*	1 0*	1 0*	1 0*
Modder B.'s	25 0	25 9	25 9*	25 3	25 0*	25 0*
Modder Deeps	38 6*	39 9	40 0	39 6*	39 9*	39 9
Modder Easts	6 4	6 6	6 9	7 0	7 0	7 1
Natal Navig. Colls.	28 3*	28 3*	28 9		28 3*	28 0*
National Banks		220 0b				
New Eland Dmds.	24 0*	24 0*	24 0*		24 0*	24 0*
New Era Cons.	5 9*	—	5 6*	5 9*	6 0	5 9*
New Geduld Deeps	1 4*	1 4*	1 4*	1 4*	1 4*	1 4*
New Kleinfonteins	4 6*	4 9*	5 0*	5 0*	5 0*	5 0*
New Modders	66 6*	67 0	67 6	66 9*	67 0*	67 3*
New Primrose	4 3*		4 3*	4 6*		
New Unifieds	3 6*		4 0†	3 6*	3 6*	3 6*
New State Areas	25 6*	26 6	26 6	26 3*	26 3*	26 3*
Nigels	5 3*	5 3*	5 3*	5 0*	5 3*	
Nourse Mines	10 1*	10 9	10 7½	10 6	10 6*	10 6
Pretoria Cements	40 6	40 9*	40 9*	40 6*	40 3	40 0*
Princess Estates	1 2*	1 2*	1 2*	1 2*	1 2*	1 2*
Rand Nucleus		1 1*		1 1*	1 1*	1 1*
Randfontein Centrals	10 0*	10 0*	10 0*	10 0*	10 0*	10 0*
Do. Estates	15 10½	16 6	16 0	15 9	15 6*	15 9
Rouxville Dmds.	1 3*	1 3*	1 4*	1 3*	1 4*	1 3*
Roberts Victors	10 0*	10 0*	10 0*	9 6*	10 6†	
Rooibergs	3 0*	3 0*	3 4*	3 4*	3 4	3 4
Simmer and Jacks.		2 6*	2 6*	2 9b	2 7*	2 8*
S.A. Lands	4 0*	4 2*	4 3*	4 0*	4 2*	4 3*
Springs Mines	37 0*	38 0	37 3	36 9	37 0*	37 0*
Sub-Nigels	10 7*	11 3	11 0*	11 0*	11 0*	11 3
Swaziland Tins	10 0†	—		—		
S.A. Alkali	—	—	12 9*	13 6†	12 9	
S.A. Townships	8 6*	8 6*	8 0a	8 3*	8 4*	8 4*
Transvaal Lands	—	—		—		16 0†
Trans. G.M. Estates	8 3†	8 3†	—	—	7 6*	8 3*
Transvaal Silvers	19 0*	19 6	20 0*	19 9*	19 9*	19 0*
Tudors	0 9†	0 9†	0 9†		0 9†	0 9†
Van Ryn Deeps	60 6*	60 6	61 9	61 0	61 0*	61 9
Village Deeps		7 6†		6 6*	6 0*	6 3*
West Springs	7 0*	7 6†	7 3*	7 3*	7 6	7 3*
West Rand Cons.		1 9*	1 9*	1 5*		
Western Rand Est.	3 0*	3 0*	3 0*	3 0*	3 0*	3 1*
Witbank Colls.		33 6*	33 9*		33 6b	33 6*
Wit. Deeps	8 0*	8 0	8 0*	8 0*	8 0*	
Zaaiplaats Tins	—		2 6*	3 0†	3 0†	3 0†
Union 5 per cent.	£101¼*	£101½*	£101½*	£101½	£107¾*	£101¾*

* Buyers † Sellers. a. Odd lots. b. Ex London.

Mining Men and Matters.

Mr. L. E. N. Homan arrived from England last week.

*   *   *

Mr. E. Hardack, formerly well known on the Rand as manager of the Wit. Deep, arrived from England last week.

*   *   *

Mr. W. B. Jackson has been appointed Acting Chief Inspector of Explosives for the Union during the absence on leave of Major A. B. Denne.

*   *   *

We take the following, headed "A Talented Family," from a London contemporary:—Mr. Edgar P. Rathbone will be well remembered in Johannesburg in the early days. He stood high in his profession, and made an admirable editor of the *Mining Journal*. We were sorry to hear of the death of his wife, and, though it was some time ago, we can feel for him in his blow. We are permitted to print a letter from Johannesburg written by his daughter. It is an able communication. Mr. Rathbone's son Basil is carrying everything before him as an actor. He has reached the top of the theatrical tree at a very early age. He has made a great hit in New York at the Empire Theatre. He is playing in a new piece called "Czarina," dealing with Catherine the Great of Russia, who makes love to Basil as a Captain of Cossacks. Doris Keene, of "Romance" fame, is the lady. The piece will be brought to London later on.

Explosives and Chemical Works

IMPORTANT FORTHCOMING PUBLICATION.

The "S.A. Mining and Engineering Journal" has now in preparation a special illustrated supplement dealing with explosives and chemical works of the Union. Several of the principal firms having factories of this nature are giving their active support to the publication, which will be issued as a supplement to the ordinary weekly issue of the journal. Special commissioners are now visiting the various works, and the results of their investigations will be published in the supplement in the form of full, descriptive and illustrated articles. The supplement will also contain valuable data as to the quantities of explosives, fertilisers, chemicals, etc., produced in the Union, methods of manufacture and details as to markets and consumption. Prospective advertisers and manufacturers of chemicals, etc., interested in this supplement are advised to communicate with this office at the earliest opportunity.

ENGINEERING SECTION.

"Broken Tools."

SOME OF THE CAUSES OF SPLINTERING AND CRACKING OF HARDENED STEEL.

(Specially written for the "S.A.M. & E.J.," by J. A. Holden.)

By taking a piece of steel containing .80% carbon (such as is largely used for rock drills) and heating slowly to 830°C, and allowing it to cool, by plotting temperature against time we get a curve such as is shown in Fig. 8. The jogs in this curve represent the critical points. Unless this steel is heated to at least the temperature of the first jog (i.e., 738°C), and quenched in water (or oil) beore it has fallen to the second jog (716°C), the steel cannot be hardened. Thus the critical points have a very important and practical significance. By repeating the above procedure upon a number of steels containing different percentages of carbon the diagram shown in Fig. 9 is obtained.

Referring to the .80% carbon steel it may be of interest to follow the structural changes brought about by hardening. In the annealed and softest condition the steel has the micro structure shown in Fig. 10. The dark lines in the photograph are the very soft constituent ferrite (or nearly pure iron, and the white lines are the very hard constituent cementite, thus it will be observed that the steel is made up of alternate layers (microscopically small) of hard and soft material, and this explains why a properly annealed steel machines so readily. The structure depicted in Fig. 10 is known as pearlite. After hardening we find the alternate layers of ferrite and cementite are no longer present, and instead we have a needle shaped formation, together with various dark areas, as is shown in Fig. 11. If the hardening was sufficiently drastic the whole structure would be needle like. Commercially, however, this is harely obtained. The needle formation is typical of hardened (but untempered steels), and is known as martensite; it is the hardest structure of all. The black areas in Fig. 11 are called troostite. This is a hard formation, but less brittle than martensite. Troostite increases in quantity with tempering, thus it is a constituent of all commercially hardened and tempered steels. If the steel is quenched at a much higher temperature than the critical range the structure becomes coarser; the needle like appearance develops into a more or less triangular formation, and the steel when fractured no longer shows the silky texture associated with a correctly hardened tool, but instead it reveals a dull granular appearance. Even if the steel is allowed to cool a little before quenching, it will nevertheless still show a coarse structure; hence the wise old rule of always harden upon a rising heat.

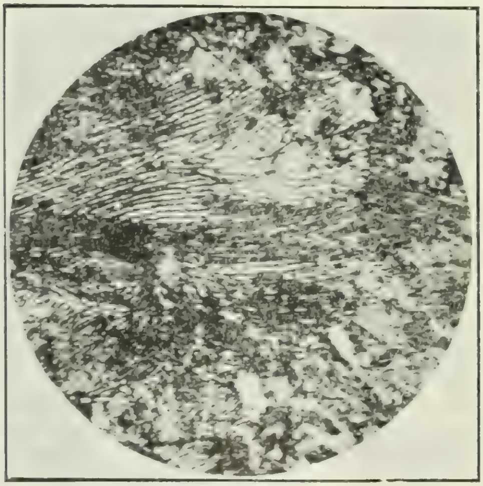


Fig. 10: Annealed Carbon Steel. Pearlitic Structure × 1000.

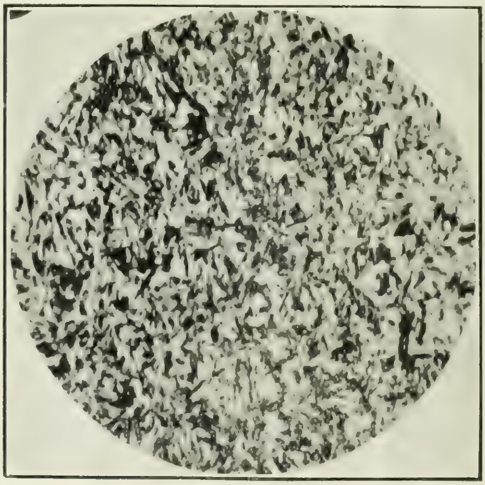


Fig. 11: 80 per cent. Carbon Steel, × 500. Hardened from 770 degrees, quenched in Oil. Martensite and Troostite.

III

There are at times failures with tools which can be traced to the use of wet tongs. The effect of the wet tongs is to momentarily harden the spot in contact, but this is immediately and considerably tempered by the heat remaining in the body of the article. The net result is a soft area. The writer came across this defect in a reamer which was very soft upon one side; the remainder was quite hard. By etching with alcohol containing 2 per cent. of nitric acid a dark area corresponding to one face of the tongs was clearly visible.

Soft areas can also be obtained during grinding. The grinding of steel is a machining operation, the wheel acting as a milling cutter, with innumerable teeth, but differing from a milling cutter in so far that the grains of grit (which act as teeth) are rapidly worn and replaced by new ones. It can be shown that different steels demand different conditions from the grinder. Generally it may be stated that the harder the steel the softer and more open the texture of the stone. This broad statement, therefore, excludes emery wheels as suitable for use upon hardened carbon steels. It is not a difficult matter to decide whether the wheel, feed and speed are suitable for the work in hand. By examining the wet sludge (from the machine) under a powerful hand lense it will show either burnt blobs of metal or small curly cuttings (mixed with the disintegrated and worn grains of the wheel). If the latter the conditions are correct; if the former, then there is every danger of cracking the tools. The little burnt blobs of metal seen in the sludge from the grinder are particles of steel burnt by friction. If the heat is sufficient to burn the metal removed it is certainly sufficient to soften local areas. If the feed or pressure is applied rashly a red hot spot will be produced which, when the water rushes over it will cause splintering. This serves to illustrate what is by no means a rare occurrence in the grinding shop, and also that when deciding upon the working conditions for grinding hardened tools it demands something more than the haphazard use of a rapidly revolving abrasive wheel.

The General Electric Co.

A 21st BIRTHDAY AT WITTON.

The *Manchester Guardian* of February 8th gives prominence to an article reading:—The General Electric Company's works at Witton, Birmingham, celebrated yesterday their 21st birthday with a visit from a number of press representatives and a tour of inspection through the bigger departments.

This coming of age marks perhaps one of the most important developments in the company's history—the recognition of serious enterprise in heavy electrical machinery and it is a good omen that Dr. A. H. Railing, a director of the company, was able to announce at lunch that they had secured the contract for the electrical extension of the London, Brighton and South Coast Railway.

It is some years since the firm began to make heavyweight machinery, and an inspection of the shops shows they have a well-developed line of large power plant. They have made motors from a half horse-power up to one capable of 10,000 horse-power, this last being employed in a steel rolling mill. Another big piece of work was the construction of a turbo-generator with an output of 22,500 k.v.a., running at about 3,000 r.p.m.

Some of the switchgear made at Witton is impressively capable and includes the equipment of a special switchgear house for the Metropolitan Railway. This is for 11,000 volt gear to control one 12,000 k.v.a. alternator, five 5,000 k.v.a., alternators and 15 outgoing 300 amp. feeders. It will be a three-storey affair with oil switches in the middle, these having a breaking capacity of 350,000 k.v.a. Only a short time ago the firm turned out several oil switches with a breaking capacity of 800,000 k.v.a., for a South American mining company. About 40 per cent. of the Company's products go abroad.

The company's name truthfully represents the sort of commodities it offers, for it has designed a large capacity vacuum cleaner, and has fitted to a two-stroke internal combustion engine a household lighting set, besides manufacturing in bulk various other small articles of usual electrical equipment. One associated company makes electric cable. The result of the general policy is that the company can now offer the complete equipment of power stations, railways, ships, collieries, mines—in short, every class of industrial undertaking. The great majority of such equipment is made within its own organisation, so that the benefits of co-ordination can most easily be achieved.

A Rapid Development.

The works at Witton began on February 7, 1901. The company itself, however, had its foundations in the 70's and 80's of last century, and thus had some momentum behind it when the acreage of meadow land was taken up on the outskirts of Birmingham. Since then it has grown into a busy cluster of eight large buildings, bounded by a railway, a canal, and a good road.

The two latest buildings are the administrative block and the switchgear works. This had been designed for maximum light and working room. It is of ferro-concrete, with almost continuous windows on the wall and north lights on the roof. The foundry and main engineering works are so placed and so organised that castings run straight into the shop for machining, describe a right angle into the hands of electrical technicians, moving forward from one to another, rejoin the main stream, and so pass to the testers, who examine every unit, large and small.

Besides the main buildings, there are the development and research department and the club-house erected to the memory of men who died in the war.

The General Electric Company's works at Witton are but one of many large factories owned by the company, and of which the British General Electric Co., Ltd., Johannesburg, Capetown and Durban, is a branch

Letters to the Editor.

THE "PASSING OF THE DIAMOND INDUSTRY."

To the Editor, S.A. *Mining and Engineering Journal.*

Sir,—I feel that both letters, "Engineer's" and W. B. Collins', call for comment. The former is unduly pessimistic, the latter unduly optimistic. At the outset I would like to mention, although it is not really my place to do so, that I am a staunch optimist for South Africa's industrial future, for several reasons. The diamond industry is by no means a permanent one, no more than the ancient nephrite industry was. Fashions in precious stones have, and will change very much during the course of centuries—a century alone is quite enough for our diamond industry to be satisfied with. Nevertheless, such ups and downs as Kimberley is experiencing, every few years, are of no benefit to the workman. He must have work which is reasonably constant and which does not depend upon the caprice of feminine vanity, either now or a century hence. Of course, we all hope that once world conditions are better the diamond industry will remain constant, more or less. I think that should frequent depressions visit the world in the near future, diamonds will be less in demand than bread, and this is where the former loses. Therefore, Kimberley must supplement, not supplant, her industry with such as make the more necessary commodities, to tide over "rainy days" with. When she has both industries, Kimberley will be as permanent an industrial centre as any town. Then the closed-down diamond mines will always have a suitable supply of skilled labour close at hand whenever it reopens, instead of collecting scattered remnants.—Yours, etc.,

E. E. BUTTNER.

At the Pretoria alluvial diggings in January 94 diggers won 1,076 carats of diamonds, valued at £1,071.

A Useful Adjunct to Turbine Plant.

The importance of maintaining the best vacuum obtainable under varying conditions of load and cooling water temperature is recognised by all engineers who are running turbine plants. But it is a problem of considerable difficulty to ascertain (1) the state of the condenser tubes, (2) the efficiency of air extraction and any amount of air leakage, and (3) the temperature difference between the leaving circulating water and the entering exhaust steam.

Knowledge, obtainable at will, of the last point, temperature difference, with precision will give an operating engineer a clear indication of the other points, and in general keep him closely acquainted with his condensing efficiency.

The measuring of this temperature difference by ordinary thermometric means is impracticable for several reasons. Some of the most important are the accuracy required, the difficulty of inserting necessary thermometers into the steam space and into the circulating outlet branch, and, when they are there of reading them. Dr. Paul Müller has applied two resistance thermometers to this service. They are worked in conjunction with a Wheatstone's bridge, the galvanometer in this case being a millivoltmeter, graduated from 0 deg. C. to 15 deg. C. The temperature difference can thus be shown continuously or read as required. The combination is known as the Müller economy meter.

Under ideal conditions the difference in temperature between entering exhaust steam and leaving circulating water can be brought down as low as 0·5 deg., but under operating conditions it cannot be maintained consistently lower than 3 deg. C. When it exceeds 3 deg. C. this is an indication that either the tubes require cleaning or there are air leakages, or the air extraction is inefficient, or two or more of these defects in conjunction.

Take a practical example of the application of the meter. Assume a circulating inlet temperature of 27 deg. C. (summer conditions), with a ratio of circulating water to condensate 60:1, an exhaust steam temperature of 40 deg. C., vacuum 92·5 per cent., with circulating discharge temperature of 37 deg. C. The Müller economy meter would therefore show a reading of 3·0 deg. C.

Turn now to winter conditions, with the same plant similarly loaded, and let us say that the vacuum obtained is 94 per cent. with inlet water 17 deg. C. This would appear to be a fairly good result, seeing that the vacuum is but 1·5 per cent. better. But application of the Müller meter would show a temperature difference of 13 deg. C. Bringing this down to the required 3 deg. C. would improve the vacuum to 96·6 per cent. and diminish the steam consumption by at least 7 per cent.

The economy meter is the only instrument by means of which the three inefficient conditions can be clearly indicated in a simple and direct manner. It should therefore appeal to any engineer running a turbine plant.

Hot Electrical Contacts and Joints.

Operating engineers are well acquainted with the delays and extra work entailed in determining that joints and contacts carrying heavy currents are in an efficient state. In order to detect any heating, before it becomes serious and obvious, it is necessary to make the local conductors dead and to go over all such joints, etc., by hand.

A device which obviates this consists of a rod similar in construction to the ordinary link stick but having mounted on its tip a projecting thermocouple and a millivoltmeter, connected with it (having a scale graduated in degrees Centigrade), which can easily be read by the operator holding the rod. The thermocouple, which when not in use is protected by a sliding sleeve, is gently pressed upon the spot whose temperature it is desired to determine, and a steady reading of the temperature is got in 2 seconds.

A Mammoth Turbo-Alternator.

Messrs. Siemens-Schukert Works are responsible for a noteworthy three-phase alternator, ordered in 1916 by the Rhine Westphalian Electricity Works, to give 60,000 k.v.a. continuously at 1,000 r.p.m. and 6,600-7,000 volts. Not only is the speed of the unit high but it had to be built to withstand an overspeed of 50 per cent. The dimensions of the parts naturally reached the maximum permissible on the railways. The stator complete weighs 145,000 k.g., 10,000 k.g. of which is copper. The rotor weight is 104,000 k.g., 11,000 k.g. of which is copper. Full excitation requires 1,000 amperes at 220 volts. When starting up tests showed that with 800 k.w. input it took 25 minutes to run the set up to 1,000 r.p.m. Ventilation of the axial type is furnished by means of an external fan, 60 cubic metres of air per second being forced through under a working head of 250 m.m. water. The stator winding is of simple bar type with laminated conductors and solid end connectors. Micanite insulation is used. Short circuit tests under full pressure were carried out in 1918 and no movement of the windings was observable. The unit has been in operation since 1917 and has given entire satisfaction. The steam turbine, by the A.E.G., is a single-cylinder unit and is believed to be the largest of this type ever built.

THE HYDROGEN, OXYGEN & PLANT CO., Ltd
(REGISTERED IN ENGLAND).
99, PARK ROAD, NEWTOWN, JOHANNESBURG.

Manufacturers of .. .. Hydrogen and Oxygen in bulk for Industrial and Medical purposes. .. ..

Sole Representatives and Stockists for the Alloy Welding Processes, Limited, LONDON.

Manufacturers of .. .. Electrodes and Plant for Oxy-Acetylene and Electric Welding purposes. .. ..

General Managers in S.A. :—
Messrs. DOWSON & DOBSON, LIMITED, JOHANNESBURG.

ALL COMMUNICATIONS TO BE ADDRESSED TO THE WORKS.

'Phone 3053. - - - Telegrams : "HOPCO." - - - P.O. Box 5404.

TRADE AND INDUSTRIES SECTION.

Week in the Mining Material and Engineering Trades.

PRESENT CRISIS EXPECTED TO BE SHARP BUT SHORT IRON AND STEEL—TIMBER AND BUILDING MATERIALS—OILS—COAL RATES—ELECTRICAL GOODS TRADING RELATIONS WITH GERMANY—METAL MARKET.

General.

The past week has been a tense and exciting one. The community had hoped that the strike had passed its zenith and that the ensuing few days would see its conclusion, or, at any rate, the beginning of the end of this long drawn out struggle. These hopes were, however, doomed to disappointment after the publication of the Chamber of Mines' reply to the request of the Federation for a further conference with a view to finding a basis for a settlement. The opinion in commercial circles is that it is improbable that the railwaymen will come out, and that generally the response to the call for a general strike will not be of so large and wide a character as the Federation profess to believe. But one thing is certain, that this calling of a general strike will alienate from the strikers whatever shreds of sympathy the general public may have retained for them up to now. Nor can any impartial and unprejudiced person see how any possible benefit or gain can be derived from such ill-advised action on the part of the unions. The economic position which faces the industry and which the strike leaders are either unable or unwilling to grasp, will not be favourably affected one iota by a prolongation of the strike, but, on the contrary, be influenced more and more adversely the longer the struggle continues, to the strikers' inevitable ultimate detriment. This economic factor is immutable, and, although so far it has not been considered by the leaders of the strikers—purposely or otherwise—must eventually be reckoned with, no matter how long the strike lasts or what colossal losses may have to be sustained by the gold mining industry and the commercial and general community. It is, however, felt that this culminating act of the Federation is the last card to be played by them—their last gasp before expiring—and that the Government are bound to take such measures as will ensure the end of the present upheaval being reached at an early date. It is generally recognised that the financial pinch of the present labour trouble will be felt very acutely during the next three months, and that it will take the community at least the whole of the present year to recover the level of business obtaining in December last. In influential circles the present crisis is not expected to act inimically to the work now being done on the mines. The community is at one in feeling that the chaotic state of affairs which has existed here for such a long time must cease. The mines must control labour and not labour the mines. Profits must be made in order that shareholders shall get dividends for their investments in this country; without those investments there would not have been sufficient workers here to-day to compose a strike. It is hoped that wiser counsels will prevail and that the strikers will soon come to their senses, breaking away from the hot-heads and agitators from other countries, who have no right to interfere with the working of our mines, and who should be deported to Russia. A very influential merchant said things were undoubtedly as bad as bad could be, trade was entirely at a standstill, and everything depended upon the attitude which the Government took up. Should that attitude be a firm one the strike must soon collapse; should, however, things be allowed to drag, we might have a bad—possibly a very bad—time ahead of us.

The exodus of natives is now nearing 50,000, against which over 1,100 boys have been taken on by the different mines during the past few days.

Iron and Steel.

There is again this week nothing to report as regards business locally, things being at a standstill, as they have been now for more than two months. The employees of the Union Steel Corporation (S.A.), Ltd., numbering over one hundred, who came out in sympathy with the other strikers, have returned, and work was resumed last Monday. The corporation has obtained a big contract, which will give employment for a long period. Since this was written it is reported the men have again come out.

New York advices are that the price of steel is tending downwards. Business is gradually increasing in blue annealed sheets at $2.25, galvanised sheets $4, tank plates and steel bars $1.40.

Latest (nominal) quotations.—Dunswart iron, 22s. per 100 lb. basis price; Union Steel Corporation, Ltd., 22s.; imported iron and steel, flats, small, 33s. to 40s.; larger sizes, 30s. to 38s.; ¼ in. and 5-16 in. rounds, iron and steel, 37s.; ⅜ in. iron, 30s. to 32s.; ½ in. and ⅝ iron, 31s.; steel, 37s.; ¾ in. round iron, 30s.; steel, 33s.; ⅞ in. and upwards, imported, round iron and steel, 30s.; channel and joists, 35s. 6d.; shafting, ⅝ in. to 2 in., 6½d.; steel plates, 1-16 in. and ⅛ in., 22s. to 23s.; 3-16 in. and upwards, 24s.; spring steel, 7½d. to 8½d. a lb.; bolts and nuts, hexagon, round, ⅜ in., 9d. to 1s.; ½ in., 45s. to 50s. per 100 lb.; ⅝ in. and ¾ in., 43s. to 48s.; hexagon nuts, ⅜ in., 11d.; ½ in., 10d.; ⅝ in. and ¾ in., 9d. lb.; fish plates, bolts and nuts, ⅜ in., 8d. lb.; ½ in., 6d.; ⅝ in., 5½d.; ¾ in., 5d.; dog spikes, 35s. per 100 lb.; rivets, ¼ in., 11d.; ⅜ in., 9d.; ½ in. and ⅝ in., 45s. per 100 lb.; brass rods, round, ⅜ in., 1s. 5d.; ½ in., 1s. 4d.; ⅝ in. and upwards, 1s. 3d.;

TRADE MARK

MAGNOLIA
ANTIFRICTION METAL

"FLOWER" BRAND.

HAS THE LOWEST CO-EFFICIENT OF FRICTION

KEEPS down the bill for lubricants, making **BEARINGS** smooth as glass and keeping them **COOL** under heaviest pressures and highest speeds.

Manufactured and Sold By—

THE MAGNOLIA ANTI-FRICTION
METAL CO. OF GREAT BRITAIN, LIMITED,
49, QUEEN VICTORIA STREET, LONDON, E.C.

Agents for South Africa: FRASER & CHALMERS, Ltd., Johannesburg,
Bulawayo and Salisbury

THE BALDWIN LOCOMOTIVE WORKS
(OF PHILADELPHIA, PENNSYLVANIA, U.S.A.)

BUILDERS OF LOCOMOTIVES SINCE 1831.

STEAM, ELECTRIC & INTERNAL COMBUSTION LOCOMOTIVES.

TRAM TRUCKS.

LADD VERTICAL WATER TUBE BOILERS.

STRUCTURAL STEEL, PLATES, PIPING, ETC.

FREDERICK V. GREEN, (Manager for Southern Africa), JOHANNESBURG.
Address: Loveday House, cor. Loveday and Marshall Streets, JOHANNESBURG
P.O. Box 7017. Cable and Telegraph Address: "BALDLOCO." Telephone 1816.

STANDARD BANK
OF SOUTH AFRICA, LIMITED.
(With which is incorporated the African Banking Corporation, Ltd.)

Established 1862.

Authorised Capital - - -	£10,000,000
Subscribed Capital - - - -	£8,916,660
Paid-up Capital - - - - -	£2,229,165
Reserve Fund - - - - -	£2,893,335

GENERAL BANKING BUSINESS transacted at all Branches and Agencies; DEPOSIT and CURRENT ACCOUNTS opened; PURCHASE and SALE of INVESTMENT SECURITIES effected, etc.

SAVINGS BANK ACCOUNTS opened on terms, particulars of which may be obtained on application.

The BANK is in close touch with TRADE and INDUSTRIAL CONDITIONS, both local and overseas, and special attention is given to COMMERCIAL ENQUIRIES from customers.

EXECUTOR and TRUSTEE business undertaken.

Over 380 Branches and Agencies in Africa.

Agents and Correspondents throughout the World.

SCREENING

Order No	Gauge	Space. Inch.
S2031	20	
S2032	18	$\frac{3}{8}$
S2033	16	
S2034	15	
S2035	14	
S2036	12	
S2037	10	

2½ Mesh, No. 16, Steel.

Ask us for quotations for all kinds and sizes of Screening; made in our own factories, and promptly delivered.

The S. A. Wire Co., Ltd.
P.O. Box 651, Durban.

ASBESTOS

HOBDELL WAY & CO., LTD.
MINORIES, LONDON.
Cables: "HOBNAILS."

brass rods, hexagon, 1d. lb. extra; copper rods, round, ⅜ in., 2s. 4d.; ½ in., 2s. 3d.; ⅝ in. and upwards, 2s. 1d. lb.; tool steel, 3s. 6d. to 3s. 9d. lb.; brass sheets, 1s. 11d. to 2s. 1d. per lb.; copper tubes, solid drawn, ¼ in., 3s. 9d. per lb.; ⅜ in., 2s. 11d. per lb.; 7-16 in., ½ in. and 9-16 in., 2s. 9d. per lb.; ¾ to 1⅛ in., 2s. 6d. per lb.; 1½ in. to 2 in., 2s. 3d. per lb.; 2½ in. to 3 in., 2s. 6d. per lb.; 3½ in. to 4½ in., 2s. 8d. per lb.; copper rods, ⅜ in., 2s. 5d. per lb.; ½ in., 2s. 4d. per lb.; ⅝ in. to 2½ in., 2s. 2d. per lb.; copper sheets, 2s. 2d. to 2s. 3d. per lb.; fire box copper, 2s. 5d. per lb.; phosphor tin, 3s. 3d.; ingot tin, 2s. 2d.; ingot lead, £28 per ton; drill steel, 6½d.; hollow, 9¾d.; 1¼ in., 9d. to 10½d.; wire nails, 30s. to 35s.; shovels, 52s. 6d. to 57s. 6d.; wheelbarrows, 47s. 6d.; picks, 37s. 6d. to 67s. 6d.; pick handles, 21s.; hammer handles, 14 in., 7s. 6d.; 18 in., 9s. 6d.; 24 in., 13s. 6d.; 30 in., 18s. 6d.; 36 in., 35s.; barbed wire, "Shorthorn," 69 lb., 13½ gauge, 22s. per coil; plain galvanised fencing wires, No. 8 gauge, 100 lb. coils, 27s. per coil; No. 10 gauge, 100 lb. coils, 29s. per coil; No. 12 gauge, 100 lb. coils, 32s. per coil; bulb tee fencing standards, 14 lb., 27s. per dozen; 12 lb., 25s. per dozen; black baling wire, 14 gauge, 19s. per coil, 100 lb.; 12 gauge barbed wire, 22s. per coil, 96 lb.; plain wire, No. 8 galvanised, 21s. per coil, 100 lb.; fencing standards, 12 lb., 20s. per dozen; screening, 3s. to 9s. 6d. per sq. yd.; cyanide, 1s. 7½d.; zinc shavings, 1s. per lb.

Second-hand Machinery.

Things are getting worse and worse in the second-hand machinery business, said a well-known dealer, and now since the general strike has been called transactions will, of course, be greatly curtailed. Strikers apparently will stop at nothing, and it appears doubtful whether goods to be delivered locally or outside of town will reach their destination. Merchants are rather loth to do business outside, with the possible chance of the railwaymen also coming out and their goods being hung up between stations. Generally speaking, however, merchants are convinced that the railwaymen will not participate in this strike. Wiser counsels will no doubt prevail. There have been several inquiries recently and there are one or two big orders knocking about for material, but the deals cannot be concluded until things are settled. There is practically no business doing at the moment

British Engineering Workers.

The recent conference between the engineering employers and workers proved abortive, and the possibility is in no way remote of a lock-out commencing to-day.

Timber and Building Materials.

The calling of the general strike by the Federation has brought out the building operatives and business is consequently at a standstill.

Timber prices.—3 x 9 deals, 1s. to 1s. 1d.; scantlings, 11d.; beaver boards, 4¼d. to 4½d.; floorings, 6¼d. to 6½d.; ceilings, 4½d. to 4¾d.; Oregon, 6s. 6d. to 7s. a cube; pitch pine, 7s. 6d. to 8s.; corrugated iron, 8¼d. Furniture timber: Burmah teak, 17s. 6d. per cube here for first quality, 14s. 6d. for second at the coast; American oak, 1 in., 10½d.; 1½ in., 11d.; 2 in., 11½d., at coast; and Japanese oak, 1 in., 1s. 1d.; 1½ in., 2 in., 1s. 2d., at coast; West African mahogany, 1 in. to 4 in. thick, 26s. 9d. to 27s. 6d. per cube at coast; Rhodesian mahogany, 9s. per cubic foot at mills; Honduras mahogany, 30s. per cubic foot; American yellow pine, 1s. 9d. per foot of 1 x 12 here; American pine shelving, 1s. per ft. 3-ply wood, 3 m.m. up to 5 m.m., alder and birch, 4d. to 6½d. per sq. ft.; oak and teak, 3-ply, 11d. per sq ft. Prices for bricks are about: Mixed, 70s.; wire-cuts, £4 10s. to £5; and £5 for pressed per 1,000, at kilns; white lime, 7s.; unslaked, 10s. 6d. per 180 lb. bag; 8 lb. bag, 1s.; blue lime, 3s. 10d.; blue plaster lime, 4s. 10d.; cement, 11s. 6d. a bag; damp course and roofing, 36s., 54s. to 55s. for 1 to 3-ply.

Oil and Ammonia.

The prospects are very encouraging that oil and ammonia may be recovered in large quantities from the oil shales in an area near the Orange River, eight feet thick, and extending many miles. Kimberley men have large options there, and the preliminary assays of the shale samples are said to be very favourable.

Operations are about to commence for the purpose of striking oil in the Uitenhage basin. Options have been secured on several thousand morgen.

Latest advices from the United States are to the effect that in crude oil production at the large refineries is curtailed; there is no change in paraffin and motor oils.

Coal Rates.

The revised railage rate on bunker coal to Cape ports will, it is said, have the effect of reducing bunker coal at Capetown to £1 per short ton. At Natal, taking Glencoe as a basis, bunker coal from that quarter costs the shipowner bunkering at Natal only 15s. 10d. per short ton.

Electrical Goods.

One of our largest dealers in electrical appliances stated that there was practically nothing doing just now, the few orders coming in from outside representing only as many shillings as before the strike were expressed in pounds. There are no official alterations to record either locally or from home, but some firms, he said, were selling fully 20 per cent. below cost in order to realise and take up material now coming in.

Trading Relations with Germany.

Mr. Walter Leaf, the Chairman of the London County, Westminster and Paris Bank, Ltd., and an outstanding figure in the world of finance and banking, made an important speech at the annual meeting of the bank last month. It was, he said, to Central Europe, and notably to Germany, that we must look for recovery in trade. Germany before the War was, outside the Empire, our best customer, and until we recovered our trade with her we could have no hope of a commercial boom. Germany's purchasing power for our products was, he said, at the present moment almost nil, but it should be Britain's policy to help her on her legs again, to bring her nearer to the position of our best customer outside the Empire which she used to hold. Unfortunately, however, the Safeguarding of Industries Act is so designed as to diminish, so far as possible, what little purchasing power Germany has left—both as regards the possibility of buying our manufactures or of paying the reparations demanded. Further, we were driving her to compete all the more keenly with us in other markets. Mr. Leaf emphasised real peace as the great need, a peace which would open up and stimulate international commerce.

In this connection the visit to London of Herr Otto Wiedfeldt, Chairman of Krupps, is not without significance. His visit, he stated to the *Financial Times*, is for the purpose of ascertaining to what extent British business men are prepared to enter into relations with business men in Germany, with a view, if possible, to co-operation between the two countries in restoring normal trading conditions.

The American Shipping Subsidy.

British shipowners are hard hit by the announcement recently made by President Harding that a sum of 32,000,000 dollars be paid annually as a subsidy to American ships. At least 50 per cent. of the immigrants to the United States will be compelled to travel by them. The big American railroad companies are allowed to own ocean-going steamers, and effective preferential rates will be given to goods carried in American vessels.

Metal Market.

Latest quotations: Standard copper, £60 2s. 6d. cash, £60 17s. 6d. forward; electrolytic copper, £65 cash, £66 10s. forward; standard tin, £144 17s. 6d. cash, £147 forward; foreign lead, £20 15s. cash, £20 12s. 6d. forward; quicksilver, £11; bar silver, 32⅝d.; bar gold, 94s. 6d. per oz.

Premier (Transvaal) Diamond Mining Company, Limited

(Incorporated in the Transvaal).

DIRECTORS' REPORT

FOR THE FINANCIAL YEAR ENDED 31st OCTOBER, 1921.

Submitted to the Shareholders at the Nineteenth Ordinary General Meeting of the Company, held on Friday, 24th February, 1922.

To the Shareholders.

Gentlemen,—Your Directors have much pleasure in submitting their Nineteenth Annual Report, together with the Balance Sheet and Expenditure and Revenue Accounts for the year ended 31st October, 1921.

PROPERTY.

Your Mining and Freehold properties remain the same as at the close of the last financial year.

EXPENDITURE AND REVENUE ACCOUNTS.

Expenditure and Revenue Account No. 1 discloses a working profit of £110,384 17s. 5d.

The diamonds on hand at the end of the Company's year have been taken into stock at the nominal value of 1s. (one shilling sterling).

After allowing for expenditure on equipment, amounting to £20,030 4s. 11d., the balance of the Expenditure and Revenue Account No. 2 is £90,354 12s. 6d., which is the amount available for distribution between the Government and the Company.

The Appropriation Account shows how the Company's share of profit has been dealt with.

The Trading Fund and the Emergency Fund remain the same as at the close of the last financial year, the balances at the credit of these funds being £400,000 and [illegible] respectively.

SALE OF DIAMONDS.

Towards the end of the financial year 1919-1920 the demand for diamonds slackened considerably, and since then has become worse, so that to-day the small demand is being met by the Bolshevik diamonds and the output of others than the four Conference Producers.

The revenue from diamonds for the year ending 31st October, 1921, was only £439,636 as against £2,098,482 for the previous year.

DIVIDENDS.

The dividends declared and paid during the year were:

On the Preference Issue:

No. 33 (6s. 3d. per share) for the period 1st November, 1920, to 30th April, 1921, less the Dividend Tax of 7½ per cent.—declared 18th April, 1921, paid 20th June, 1921 … … … … … … … …	£46,250
No. 34 (6s. 3d. per share) for the period 1st May to 31st October, 1921, less the Dividend Tax of 7½ per cent., declared 17th October, 1921 … … … … … … …	46,250
	£92,500

MINE.

The General Manager's Report annexed hereto gives a full statement of the Company's operations during the past year, and deals also with the labour position, working costs, etc.

DIRECTORATE.

Sir Thomas Major Cullinan, D.S.O., and Mrs. James Gunson Lawn, C.B.E., retire in terms of the Company's Articles of Association, but, being eligible, offer themselves for re-election.

AUDITORS.

The Auditors of the Company, Messrs. Howard Pim & Hardy, and Messrs. Alexander Aiken & Carter, retire, but are eligible for re-appointment. You will be asked to fix their remuneration for the past audit and to appoint auditors for the ensuing year.

T. M. CULLINAN, Chairman.
P. ROSS FRAMES,
J. G. LAWN,
W. MAXWELL MUNRO,
R. R. HOLLINS,
J. MUNRO,
A. A. AURET, Directors.

Cullinan Building, Simmonds Street,
Johannesburg, 7th December, 1921.

PREMIER (TRANSVAAL) DIAMOND MINING COMPANY, LIMITED

(INCORPORATED IN THE TRANSVAAL).

EXPENDITURE AND REVENUE ACCOUNT No. 1
For the Twelve Months ended 31st October, 1921.

Number of Loads Washed, 1,954,230 for 411,981 Carats of Diamonds.

Dr.			Cr.	
To Mine Expenses		£335,716 11 9	By Diamonds Account	£439,636 1 6
.. Administrative Expenses Johannesburg and London.		16,463 18 3	.. Sundry Revenue, being Interest on Investments	28,893 8 3
.. Directors' and Auditors' Fees		5,964 2 4		
Directors' Fees	£5,000 0 0			
Auditors' Fees and Expenses	964 2 4			
.. Balance carried to Expenditure and Revenue Account No. 2		110,384 17 5		
		£468,529 9 9		£468,529 9 9

W. M. CHALMERS, Assistant Secretary.

T. M. CULLINAN, Chairman.
P. ROSS FRAMES, } Directors.
J. MUNRO, }

Examined and found correct

Johannesburg,
7th December, 1921.

HOWARD PIM & HARDY, } (Registered Public Accountants).
ALEX. AIKEN & CARTER, }
Auditors.

EXPENDITURE AND REVENUE ACCOUNT No. 2
For the Twelve Months ended 31st October, 1921.

Dr.			Cr.	
To General Equipment		£20,030 4 11	By Balance of Expenditure and Revenue Account No. 1	£110,384 17 5
.. Balance of Realised Profits Divisible as follows:		90,354 12 6		
.. Government of the Union of South Africa— 60 per cent. carried to Balance Sheet..	£54,212 15 6			
.. Shareholders— 40 per cent. carried to Appropriation Account	36,141 17 0			
		£110,384 17 5		£110,384 17 5

W. M. CHALMERS, Assistant Secretary.

T. M. CULLINAN, Chairman.
P. ROSS FRAMES, } Directors.
J. MUNRO, }

Examined and found correct

Johannesburg,
7th December, 1921.

HOWARD PIM & HARDY, } (Registered Public Accountants).
ALEX. AIKEN & CARTER, }
Auditors.

SHAREHOLDERS' APPROPRIATION ACCOUNT, 31st October, 1921.

To Dividend Account		£92,500 0 0	By Balance brought forward from Appropriation Account, 31st October, 1920	£40,964 13 6
Preference Dividend No. 33, less 7½ per cent. Union Dividend Tax	£46,250 0 0		.. Sundry Revenue (including refund of British Income Tax and refund of capital invested with S.A. Marine, Fire and General Insurance Co., Ltd., with interest)... ...	100,188 5 0
Preference Dividend No. 34, less 7½ per cent. Union Dividend Tax	46,250 0 0		.. Shareholders' 40 per cent. Share of Balance of Realised Profits Brought forward from Expenditure and Revenue Account No. 2.	36,141 17 0
.. South African Income Tax		2,635 17 0		
.. Union Government 7½ per cent. Dividend Tax (less adjustments)...		4,237 17 6		
Balance to Balance Sheet		77,921 1 0		
		£177,294 15 6		£177,294 15 6

W. M. CHALMERS, Assistant Secretary.

T. M. CULLINAN, Chairman.
P. ROSS FRAMES, } Directors.
J. MUNRO, }

Examined and found correct

Johannesburg,
7th December, 1921.

HOWARD PIM & HARDY, } (Registered Public Accountants).
ALEX. AIKEN & CARTER, }
Auditors.

PREMIER (TRANSVAAL) DIAMOND MINING COMPANY, LIMITED

(INCORPORATED IN THE TRANSVAAL).

BALANCE SHEET, 31st October, 1921.

ASSETS

[illegible]		£67,707 10 0
[illegible]		12,292 10 0
(As per last Balance Sheet.)		
		80,000 0 0
Shares on Hand		0 2 0
Sundry Debtors		5,543 0 9
Diamonds on Hand		0 1 0
Cash and Cash Assets		768,492 19 2
In London and Johannesburg Banks	£22,950 17 1	
5 per cent. British War Loan Stock 1929-47, £201,300 with accrued Interest	175,521 5 8	
Union of S.A. 5 per cent. Registered Local Stock, £100,000	98,812 10 0	
British Treasury Bills	335,000 0 0	
British National 5 per cent. War Bonds 1927 and 1928 £100,000	96,208 6 5	
On Loan at Short Call	40,000 0 0	
		£854,036 2 11

Note.—This total includes the amount representing the Trading and Emergency Funds as per contra.

LIABILITIES

Capital		£80,000 0 0
		80,000 0 0
Creditors		67,065 4 11
Drafts on London outstanding		16,150 0 0
Government of the Union of South Africa		54,212 15 6
Balance due 31st October 1920	£494,900 4 9	
60 per cent. share of realised profits available for division as per Expenditure and Revenue Account No. 2	54,212 15 6	
	549,113 0 3	
Less paid during the year	494,900 4 9	
	£54,212 15 6	
Trading and Emergency Funds		500,000 0 0
Trading Fund	£400,000 0 0	
Emergency Fund	100,000 0 0	
Note. These two Funds are established under Sect. 4 of the Precious Stones Amendment Act, 1908, Transvaal, and belong to the Crown and the Company in the proportions of their respective shares in the Mine.		
Employers' Liability Fund		12,437 1 6
Reserve against excess liability beyond compensation payable by Benefit Society.		
Preference Shareholders		46,250 0 0
Dividend No. 34, £50,000, less Union of S.A. 7½ per cent. Dividend Tax.		
Appropriation Account Balance.		77,921 1 0
Contingent Liability on Witwatersrand Native Labour Association, Ltd., Shares, 8s. per share on 1,564 Shares—£938 8s.		
		£854,036 2 11

W. M. CHALMERS, Assistant Secretary.

T. M. CULLINAN, Chairman.
P. ROSS FRAMES, } Directors
J. MUNRO, }

AUDITORS' REPORT.

We have examined the above Balance Sheet, and report that we have obtained all the information and explanations we have required, and that in our opinion the above Balance Sheet is properly drawn up so as to exhibit a true and correct view of the Company's affairs, according to the best of our information and the explanations given to us, and as shown by the Books of the Company.

Johannesburg,
7th December, 1921.

HOWARD PIM & HARDY, (Registered Public Accountants).
ALEX. AIKEN & CARTER, Auditors.

NOW READY.

THE S.A. MINING YEAR BOOK

1921—22.

By S. R. POTTER.

The Standard Reference Work on South African Mines.

Price 21/- net. Post free 22/6. 500 pp. Demy 8vo., Cloth, Gilt Lettered.

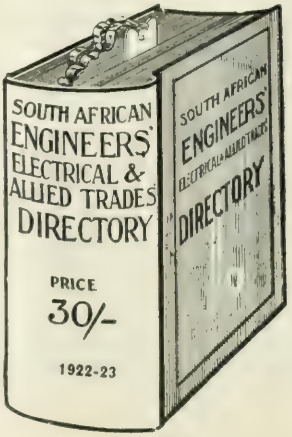
Obtainable from the Office of this Paper or from Argus (S.A.) Newspapers, Ltd., 85, Fleet Street, London, E.C. 4.

A Recognised Indispensable Work of Reference.

For Mining Investors, Mining Engineers, Mine Managers, Bankers, Stockbrokers, Solicitors or anyone interested in the Mining Industry.

A RECORD OF INFORMATION concerning Mining Companies operating in all parts of South Africa, Gold, Diamond, Copper, Tin and other Mines, Collieries, Exploration, and Mining Investment Companies.

Data Twelve Months ahead of those in other Works of Reference.



NOW
READY

Including a Complete Mining Directory of South Africa

PUBLIC SUPPLY
UNDERTAKINGS
RAILWAYS
TRAMWAYS
SUGAR MILLS
&c. &c.

Published by
S.A. Mining & Engineering Journal
Stock Exchange Building
Johannesburg

The South African
Mining & Engineering Journal
THE ONLY WEEKLY MINING PAPER IN THE CONTINENT OF AFRICA.
Established 1891.

Vol. XXXII., Part II. JOHANNESBURG, TRANSVAAL, SATURDAY, MARCH 18, 1922. No. 1590.

Red Revolution on the Rand!

The above pictures show prominent buildings on the Rand just before and after the outbreak of the Revolution. The crowds in front of the Town Hall, in the top picture, quickly dispersed on the declaration of Martial Law, and the Town Hall was occupied by strong forces of Police and Civic Guards. The bottom picture shows the Drill Hall, the headquarters of the Central Control Officer, Brig.-General Beves, where General Smuts arrived in dramatic fashion on Saturday night. The Drill Hall was also the headquarters of the Mechanical Transport, which did such excellent work.

SIEMENS BROTHERS

& CO., LIMITED

MANUFACTURERS OF

CABLES

AERIAL, UNDERGROUND, SUBMARINE.
Paper Insulated. Rubber Insulated.
Gutta-Percha Insulated.
Lead Covered. Armoured.

WIRES

Rubber Covered. Gutta-Percha Covered.
Cotton Covered. Silk Covered.
Asbestos Covered. Enamelled.
Motor Car Leads.

CABLE ACCESSORIES

Joint Boxes. Connection Boxes
Service Boxes.
Insulating Compounds. Tapes.

TELEPHONES

Manual Exchanges. Automatic Exchanges.
Intercommunication Sets.
Loud-speaking Telephones. Portable Telephones.
Mining Telephones.

TELEGRAPHS

Inkers. Sounders. Relays.
Keys, &c. Station Sets.
Fast-speed Apparatus.

LINE MATERIAL

Tubular Poles. Lattice Poles.
Pole Structures.
Arms. Brackets. Insulators.

SIGNALLING APPARATUS

For RAILWAYS—
(Siemens's All-Electric Power System)
and for
SHIPS, MINES, POWER STATIONS.

PRIMARY CELLS

Fluid and Dry.

Representatives in South Africa:

A. J. G. SIMPSON, A.M.I.E.E.
African Life Buildings, 85, St. George's St.,
CAPE TOWN.
P.O. Box 239, Cape Town. Telephone 1202 Central.

G. H. B. BERNARD, A.M.I.E.E.
9-10, Cotts Buildings, Rissik and Fox Sts.,
JOHANNESBURG.
P. O. Box 7404, Johannesburg. Telephone 408 Central.

Telegrams : "SIEMENS."

The Red Revolution.

ITS LONG RISE AND RAPID FALL.

ASSAULT ON THE RIGHTS OF FREE MEN.

Martial law was proclaimed on Monday, March 6th, following on the murder in open day of 16 natives as a culmination to a long series of brutal violence, including several attempts to wreck passenger trains filled with men and women going peaceably about their business with not the remotest connection with the strike of the miners; including also cowardly attacks on single men returning to work and cold-blooded bombing of dwelling houses wherein women and children were sleeping unconscious of this hideous danger. Here was evidence enough of an open and defiant attempt to upset the existing constitution and replace it by a reign of terror utterly foreign to the object and intentions of an industrial strike. This conspiracy, which had been long maturing in the brains of men corrupted by the mad-dog doctrines of Bolshevism, had nothing to do with the liberties of free men, though it was launched under the banner of a "White South Africa." Among the desperadoes captured on the last day of organised revolution were a Malay, a full-blooded negro, and a Russian, who had arrived only last January, together with numbers of terrorists whose swarthy complexions proclaimed them fugitives from Eastern Europe and men of criminal type. The influence of such men on a White South Africa would have been marked had they succeeded, but not in the least for the orderly living of decent white men and women. The cry was chosen to blind easily-gulled bywoner types of Boers and the unstable minds of ignorant young Britishers inflamed by the violence of direct actionists.

The battle of Fordsburg, showing the arrival of the commissariat.

These men had collected arms and ammunition, including three German machine guns imported since 1917; and while they were armed, the citizen called upon for night duty in defence of his home was sent out armed with a wooden cudgel! At one spot under the ridge of Vrededorp, held by armed revolutionaries, citizens furnished with sticks were on guard at night, the bullets flying over them, yet there are some political bluffers who put forth the insolent plea that violence was provoked by the last letter of the Chamber of Mines, which declined further truck with the Federation and asked to get into touch with the miners themselves? That letter merely forestalled the universal judgment of all sane men that was crystallised by the unprovoked murder of 16 natives. The elements of violence had been in lurid evidence before that letter was written. It was an incident on the flood of revolution already proclaimed by the open defiance of law, by bodies of men who marched in military formation, and who cloaked their menace under the beguiling plea, made with tongue in check, that it was the "custom of the Dutch to assemble for peaceful protest, in commandos!" The custom of the Dutch! One of the most truculent of the commandos was the Fordsburg Irish band. Another was formed by young ruffians who had no Dutch, and many another of these so-called peaceful commandos who marched through the streets with revolvers in pockets and loaded sticks in hand, had no more to do with the customs of the Dutch population than a hyaena had to do with the manners of a herd of sheep. Now let us pick up the story of the red rash day by day since last Thursday, where we finished.

Thursday, March 9th.

Particulars given of the killing in cold blood by the Reds of 16 natives at Vrededorp (3), Germiston (5), Ferreira's Township (4), Jubilee Compound (2) and Crown Mines (1)

Mr. De Wet, Minister of Justice, issued an official announcement declaring that these murders were committed "without the slightest provocation."

The Prime Minister declared in Parliament that additional measures would be taken to prevent further bloodshed, and in reply to Mr. Boydell, Labour leader, said that he did not intend to seek a settlement "with hooligans."

The public were officially cautioned as regards offensive action that might be taken by aeroplanes.

Colonel Pritchard, Director of Native Labour, appealed to "decent-minded Europeans" on behalf of natives.

The mail train from Capetown was derailed at Germiston by act of the Reds, who loosened rails and stretched a chain across the rails. The engine and tender were overthrown, but the first coach escaped telescoping owing to Gould buffers.

Friday, March 10th.

Martial Law proclaimed.

Revolutionaries began a series of attacks along the reef, evidently to an arranged programme.

Brakpan mine, under the command of 30 specials, was attacked and wiped out. The officer in command was, with nine officials, [illegible] in cold blood. Street fighting broke out in Benoni. The police were heavily attacked at Newlands. Indiscriminating fire broke out at Fordsburg.

[illegible] to form a standing Civic Guard force to actively co-operate with government troops.

The Witwatersrand Rifles, Rand Light Infantry, 3rd Mounted Brigade Train and 3rd Infantry Brigade Train were called out, augmenting the forces already enrolled at the Drill Hall for service.

The day's fighting was started by the Reds on a preconceived plan

Saturday, March 11th.

Announcements in the press reported four killed and 20 wounded among the Transvaal Scottish, who were thrown into the fight at Benoni straight from the trains. Police were captured at Fordsburg after a long struggle. Police barracks at Fordsburg fiercely attacked. Reds at Vrededorp opened fire on a camp of special police pitched near the Country Club, drove out the police, and then opened fire at the police horse lines and camp behind the agricultural show ground.

The Fordsburg battle: A rebel being searched after capture.

The local railway service was discontinued.

Many strikers were arrested in town. Curfew proclaimed.

The Trades Hall at Benoni, from which a fierce fire was maintained on the Government troops, was bombed by an aeroplane, flying low, and destroyed. The Reds changed their headquarters to a Jewish school.

Sunday, March 12th.

General Smuts unexpectedly arrived at 12 a.m., after a dash from Potchefstroom in a motor car. The car was fired at, and an attempt was made near Booysens to hold it up, but speed was accelerated.

The Premier's first act was to issue a statement that the position was well in hand, and leaflets dropped from aeroplanes early announced his arrival to the delighted troops.

Loyal burgher commandos from the country began a clearing movement from Krugersdorp and on the East, under Generals Van Deventer and Coen Brits, while the units under General Beves in the central district, Johannesburg, were steadily holding the Reds, whose early success was due to their conceived plan of attack.

A flight of six fighting planes from Pretoria began early in the morning to dominate the Reds at Vrededorp, Newlands and Fordsburg. Thousands of spectators watched the action. At five o'clock the Reds had been beaten back to Aasvegel Kop area, a distance of several miles. One of the machines came down owing to engine trouble, and the two officers, Lieut. Daniel and Lieut. Hamond, escaped with the Lewis gun after killing a mounted Red, who had wounded Lieut. Hamond. Another machine came down near the same spot and was burnt.

Ascertained that officials at the Brakpan mine were clubbed to death after they surrendered on their ammunition failing.

One thousand five hundred prisoners were taken at Brixton and Sophiatown, and 1,332 were lodged in the Wanderers' Ground, under escort.

The I.L.H. in Ellis Park were attakced on Saturday and lost some men, but gallantly drove the Reds from the ridges above. A mounted police force isolated at Newlands early in the fight were rescued by the advance after a gallant resistance to the Reds.

Monday, March 13th.

Benoni was taken in the morning and thousands of arrests made. General Van Deventer was on his way to Brakpan.

Many arrests were made in town, including P. S. Hendrikz, secretary of Mine Workers' Union; M. Kentridge, solicitor; A. McDermid, who was wearing a Red Cross armlet; and women also sought protection of the Red Cross to disguise their known association with the revolutionaries.

There was continuous sniping by Reds in the streets at Jeppes and along the railway at Braamfontein.

New Martial Law orders requiring permits were issued by General Beves, and there was a searching inspection of all subjects and in many cases of peaceful citizens.

There was heavy bombing by aeroplanes towards Germiston.

Tuesday, March 14th.

At 11 a.m., after the women and children and all non-combatants had full time to leave Fordsburg, an attack was made by guns, machine guns and tank on the Reds' fortified position at the Market Hall. After gun fire, troops entered the town at 11.30, and at 12.10 received the surrender of General Kloppers and the remnants. Sniping, however, broke out from other positions, and it was not till 3 p.m. that the Reds' last stronghold was taken, and the revolution was broken completely.

The Fordsburg battle, showing residents leaving before the bombardment started.

Later reports disclosed that the Reds at Benoni carried out an orgy of destruction, some of them disguised in woman's clothing, sniping the police.

General Van Deventer soon cleared Brakpan and got particulars of the treacherous murder of the mine officials, when 700 Reds overwhelmed the small garrison. Of those clubbed to death were Messrs. Loudon (surveyor), Martin (shift boss), Monsen (shift boss), and Lieutenant Brodigan and two special policemen were killed. Mr. Phillips was shot but not clubbed. Messrs. Roberts and Paterson were clubbed and left for dead, but fortunately recovered and will be able to identify some of the murderers.

When Benoni was cleared, the police camp was found intact, its defenders having put up a magnificent defence under Captain Fulton and Captain Cornwall, of the S.A.P., and Major Wehnarans, of the S.A.M.R. The latter had been joined by the Scottish under Colonel McLeod and Captain Halse, of the S.A.M.R., with a 13-pounder gun.

Wednesday, March 15th.

Sweeping movements were in progress to comb out snipers who were still active in town, in Jeppes, Vrededorp and elsewhere.

An immense concourse of homeless people had gathered at the Show Ground, where they were fed, bedded down and attended to by relief parties of citizens. The return to their deserted homes began.

It became known that the direct actionists, Fisher and Spendiff had committed suicide at Fordsburg; that the surrender was by Commandant Kloppers, and that three German Maxim guns, two dated 1917 and 1918, had been discovered.

The Reds tried to make terms, but met with a demand for unconditional surrender.

The Government forces engaged in the Fordsburg battle were Durban Light Infantry, Rand Light Infantry, Transvaal Scottish and the Police under Colonel Godley, Colonel Nussey and Colonel Taylor, General Beves directing.

From the official report it appeared that the fighting planes at Benoni took general risks, actually flying down the streets to bring their guns to bear on the windows of houses held by the Reds. The death of Captain Carey Thomas occurred in one of these bold manoeuvres.

During the Fordsburg fight mounted Red commandos looted various police stations for arms.

The town is now settling back to normal, and it is hoped that the trains will soon run and the mines be in full working

After the battle of Fordsburg, showing portion of barbed wire entanglements.

Goodyear Enterprise.

On and after March 31st, 1922, the head office of the Goodyear Tyre and Rubber Co. (S.A.), Ltd., will be situated at Commissioner Street, Johannesburg, and not as heretofore at 32, 34, 36, Chapman Street, Capetown. From March 16th the Advertising and Sales Promotional Department will operate from Johannesburg.

An Insurance Bill.

We understand on good authority, says *Insurance*, that it is the intention of the Government to bring forward a Consolidating Insurance Bill during the present session of Parliament. We hope that the exigencies caused by the strike on the Rand will not lead to its being shelved once more, as insurance legislation is more than overdue. It is not considered that there will be much controversy over the provisions of the Bill, and it is believed that when it comes forward it will go speedily through all its stages, although the suggested amount of deposits will certainly require revision. The Secretary of Finance is, we believe, considering the question of a licence for insurance agents. This licence is in existence in the United States of America and several other countries, and serves a very useful purpose in that it enhances the status of the agent and at the same time keeps the profession more or less clear of the unscrupulous individual who is out to exploit insurance business for an ulterior motive.

NEW PATENTS.

Fuma Oil Burners, Ltd.—Improved method of and apparatus for atomising and burning fuel oil.

Frank Holden and Measurements, Ltd.—Improvements in and relating to electric measuring instruments.

Frederick John Joseph Gorman.—Improved shackle coupling.

Sidney William Mayhew.—Improvements in rock drills.

Frank Leslie Judd and Harry William Weeks.—Improvements in connection fittings for electrical conduits.

Selfried Walter Blake.—Improvements in and relating to alcohol fuels.

Paul Healy Jerrard.—An improved variable speed and reversing gear.

Metropolitan-Vickers Electric Co., Ltd.—Improvements in electric switches.

George Hall Bullock and Arthur Marks Coulson.—Improvements in internal combustion engines.

George Pearce Lewis.—Improved means of combination of solid and liquid fuel.

William Temple Nourse.—Aeroplane hay wagon.

Alfred Horswill Gibbons and Gerard Herman Langeler.—Improvements in filing covers and the like.

Frederick Victor William Swanton.—Improvements in percussive rock drilling tools with renewable cutters.

Holman Bros., Ltd.—Improvements in rock-drilling machines.

Paul Healy Jerrard.—Improvements in hydraulic transmission gears, variable speed gear, rotary motor pumps, and the like.

William Wilkie.—Apparatus for moulding concrete blocks and slabs for building houses and walls and other structures.

William Wilkie.—Improvements in and connected with concrete blocks or stones for building purposes.

Ludger Mintrop.—A method of ascertaining the structure of rock strata.

Ingersoll-Rand Company.—Improvements in devices for preventing the creation of dust with rock drills.

The Ramsay Condensing Locomotive Co.—Improvements in or relating to power plant for aircraft.

The Texas Co.—Improvements in method of making light oils such as gasoline.

Metropolitan-Vickers Electrical Co., Ltd.—Improvements relating to blading for steam turbines.

Metropolitan-Vickers Electrical Co., Ltd.—Improvements in automatic electrical sub-stations.

Lewis Phillips Winby.—Improvements in or relating to devices for securing the rails of permanent ways or similar tracts.

Frederick Victor William Swanton.—Improvements in mine ventilation doors.

Paul Healy Jerrard.—A new and improved method of raising water from boreholes and the like when the pipe is out of the straight line.

Sydney Martin Gallagher.—Coalette.

Charles Zander Plen.—A new or improved fuel for internal combustion engines and the like.

Oscar Henry Lindberg.—Improved means for retarding or bringing rolling stock to rest.

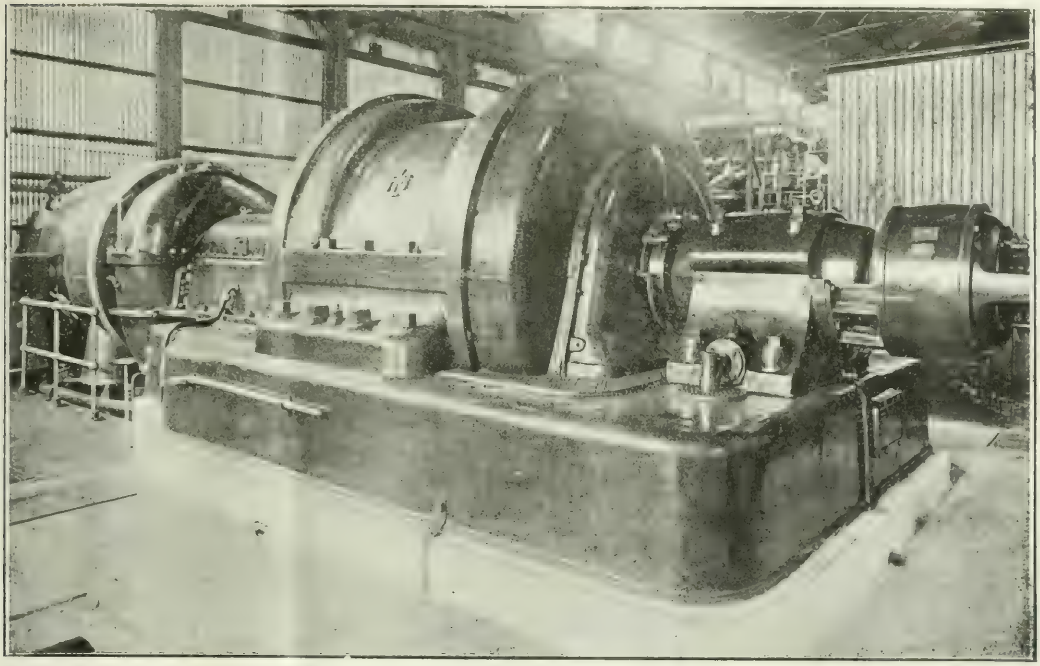
Alexander Schmidt.—Tunnelling or mining machine.

Robert Baker.—Improvements in railway and tramway sleepers.

The Magor Car Corporation.—Improvements in and relating to dump cars.

Arthur Yule McLeod.—Improved means for introducing fluids into revolving mechanism and the like.

The Johannesburg Municipal Power Plant.



Johannesburg Municipal Power Plant: An Interior View.

New Johannesburg Municipal Power Sub-Station.

The Municipal Power Plant has been very prominent in the recent trouble. After the strike of the power plant employees the station was manned and successfully run by volunteers. During the insurrection of this week the station was defended by Police and Special Constables.

Caving Systems of Mining.—II

(By J. Parke Channing, Vice-President, Miami Copper Co.)

The following important article on underground practice by a well-known American engineer appears in the January number of "Mining and Metallurgy":

Development of Block Caving System.

Block caving has resulted from a gradual development of some extremely crude methods of taking out pillars left from a room-and-pillar system of mining and from modifications of the sub-drift system. In the early days on the Gogebic Range it was customary to mine the ore with square sets made of round timber, the rule being a three-set room and a three-set pillar. This made the room considerably wider than the pillar equal to the thickness of one post and two sets of lagging. The room was carried up as far as was safe, perhaps leaving one or two sets between the back of the room and the floor of the level above. Care was not always taken that rooms should be under rooms and pillars under pillars. For a rough guess, probably not over 40 per cent. of the ore was taken out in the rooms and 60 per cent. was left in the form of pillars and floors. Drifts were then driven through the middle of these pillars undercutting the ore and drawing out what would come. Probably not over half of the remaining ore was taken out before the waste came, so that the gross extraction would not exceed 70 per cent.

In other mines, when attempts were made to increase the thickness of the slices in the sub-drift method of mining, similar losses and dilution took place. I think we may say that successful block caving systems grew out of the development of the shrinkage-stope method of mining in some of the large orebodies. In some cases, the orebody was divided into sections 50 ft. wide runing from one edge of the orebody to the other and a 25 ft. overhand stope was started in each section, the men standing on the broken ore in doing their work, the excess ore being drawn out from chutes. When it came to removing the pillars it was often found that these would not cave of their own volition, or if they did ,the pieces were too large and could not be drawn out when the shrinkage ore was drawn. This led to making the thickness of the combined room and pillar less, at times as small as 25 ft., with a 10 ft. shrinkage stope and a 15 ft. pillar, or *vice versa*. These operated better, and finally it was discovered that it was not necessary to put up these shrinkage stopes at all. All that was necessary was to get in hand-tramming drifts sufficiently close to undercut the ore and let it drop down and then draw it out through a multiplicity of raises. In some cases this undercutting was boldly attempted without having gone through the shrinkage-stope method, and this is particularly exemplified in what is known as the Ohio method, which is described in several places in the A.I.M.E. Transactions and in the *Engineering and Mining Journal*. This Ohio method is particularly noted for its economy of raising, all the raises being approximately at an angle of 45 degrees and running off from each other like the branches of a tree. In the Ohio system the blocks or layers drawn are about 35 ft. in thickness, and at the Ohio mine, which is a particularly low-grade mine, it was an eminently satisfactory method.

Difficulties of Properly Drawing Caved Ore.

As has been pointed out frequently by Henry S. Munroe, for many years professor of mining at the School of Mines, Columbia University, it is not particularly difficult to undercut an orebody and break it up. The great difficulty has always been in controlling the drawing of the ore so as to prevent piping or funneling, and an undue admixture of waste with the ore. A modification of the Ohio method, employed at the Ruth mine of the Nevada Consolidated Copper Company, is clearly explained by Walter S. Larsh. It will be noted that the ore is drawn so as to maintain a line of contact between the broken ore and the caved capping, approximating 40 degrees. As he says: "The critical part of the whole system is to draw the ore properly after it has been caved. The expectancy of each raise series is calculated from all available data, such as drill holes, raises or other workings, and charted. The amount to be drawn from each finger is determined by the stope engineers from the charts and model and is given to the foreman and bosses each shift. The angle of the contact between ore and capping from the raise series completed to those being brought in is maintained between 30 degrees and 40 degrees."

At the Miami Copper Mine, in Azizona, after having gone through the experience of narrow shrinkage stopes and pillars, a block-caving system has been developed in which the blocks drawn are 75 ft. high. The main haulage levels are 150 ft. apart, so that the ore above each haulage level is taken out in two layers or blocks. From any particular haulage level the top of the ore to be drawn is 175 ft. above the floor of this haulage level. The first hand-tramming level is established 100 ft. above the haulage level, or 75 ft. below the top of the ore. Parallel hand-tramming drifts are then driven, varying from 18 to 25 ft. apart up to the boundary of the ore. Along each hand-tramming drift, are dump chutes 50 ft. apart, which are connected, by a system of vertical and inclined raises, with the drifts in the main haulage level. Along these hand-tramming drifts numerous short raises with chutes are put in and at a somewhat higher level than the hand-tramming level, so-called mining drifts are driven; each mining drift is untimbered and is halfway between the adjoining hand-tramming drifts. After these hand-tramming drifts and mining drifts are put in, holes are drilled in the sides of the mining drifts and those nearer the extremity of the orebody are blasted, thus undercutting the ore and causing it to settle down just above the hand-tramming drifts. The broken ore from the chutes of the hand-tramming drifts is then drawn, under the same supervision as at the Ruth, so as to establish a plane between the capping and the broken ore, which in this case more nearly approximates 60 degrees than the 30 degrees or 40 degrees mentioned for the Ruth. The ore from these raises is trammed back by hand, dumped down the nearest chute, and eventually finds its way down the main haulage level. On the general retreat, before any particular section of the hand-tramming drift is abandoned, the ore immediately on top of it is mined out in a manner similar to that of the so-called "mining drifts"; in this way the ore is practically drawn down to within a short distance above the hand-tramming drifts. If capping comes from any particular chute before the time determined by the engineers, it is known that piping has taken place. This particular chute is then sealed off and the surrounding chutes are drawn, which usually breaks up the pipe. The sealed chute is reopened and the clean ore usually comes after a few cars of waste are removed.

Advantages of Miami System.

The advantage of this system is that with its multiplicity of chutes the drawing of the ore is under complete control and a minimum amount of ore is lost and a minimum amount of dilution takes place. The whole orebody is

WANTED.

Miner for S.W. Protectorate with experience of Tin; apply with references, Box 254, East London.

not drawn back from the boundary but is divided into panels 150 ft. wide, leaving corresponding pillars between, so that each panel as it is drawn back is served by either six or eight hand-tramming drifts. After these panels have been drawn back a certain distance, the intermediate panels are attacked, this method reducing the great pressure that would occur if an attempt were made to draw the whole face at one time. After the 75 ft. upper block is either mined or retreated sufficiently, the next hand-tramming level 75 ft. below and 25 ft. above the haulage level is opened in a similar manner, although possibly the hand tramming drifts may be at right angles to those in the upper block. The result is that after the two blocks 75 ft. in height have been drawn the ore is mined down to a point 25 ft. above the main haulage level. In the meantime, the haulage next level below is prepared, but before drawing out the top block on the level below it is desirable to remove the timbers from the upper haulage level so that they may not interfere with the drawing.

In comparing the above method of block caving with straight slicing in copper mining, it may be said that the profit per cubic foot of original ore body will be more than by straight top slicing. The recovery of copper will not be as great per cubic foot of original ore body as that by top slicing, but it is more than made up for by the decreased cost. In comparing a good block caving system with top slicing, I should be inclined to say that for copper ore running 2½ per cent. or over, probably it would be more desirable to use the top-slice method, but that when the ore runs 2 per cent. or under the block caving system would be the better. One advantage of the block caving system is that it requires only half as many miners as the top-slicing method, and, of course, requires very much less timber. If the drawing is conscientiously carried out, the results are entirely satisfactory and the loss by dilution is reduced to a minimum.

OFFICIAL STATISTICAL YEAR-BOOK.

The fourth issue of the Official Year Book for the Union, Basutoland, Bechuanaland and Swaziland contains statistics mainly for the period 1910-20, and is edited by Mr. C. W. Cousins, Director of Census, who points out that a slight re-arrangement of the sequence of chapters had been necessitated by the appropriation of a separate chapter to the subject of prices and the cost of living, and a further chapter to labour and industrial conditions. The importance of these subjects was sufficient to justify the re-arrangement, and the amount of statistical material now available contrasted favourably with that at his disposal when the first Year Book was issued and these subjects were combined with others in a single chapter. By arranging for publication later in each year than was proposed originally the statistical matter in the Year Book could now be brought more closely up to date. "It will be seen that in the main the statistics in the present issue cover the year 1920, two years in advance of the previous issue, and that in some cases matter of an even later date has been included," he says. "Effort is now being directed to concentration on elements which have proved to be of value, the elimination of elements of a contrary character, and the analysis and interpretation of the various sections of statistics which are now becoming regularly available. In almost every branch of public affairs, social, industrial and economic, statistics in the Union are now supplying a standard of comparison by means of which the progress of the country can be measured with a degree of confidence and accuracy previously impossible. Assurance can already take the place of uncertainty, guess-work and irresponsible opinion."

Victoria Falls and Transvaal Power.

The net earnings, including those of the Rand Mines Power Supply Company, for the quarter ended 31st December, amounted to £205,682, before providing for taxation in South Africa and the United Kingdom.

Important Tenders Accepted.

Supply of Conduit and Conduit Fittings: The English Electric Co., Capetown, £1,213 16s.

Water Supply, etc., to New Quarters, Bacteriological Laboratory, Onderstepoort: The Corbishley Building and Contracting Co., Pretoria, £2,394 7s. 6d.

Drainage, Water Supply, etc., to Leper Asylum, Pretoria: Evans & Blackburn, Pretoria, £22,250.

FEBRUARY COMPANY REGISTRATIONS.

The Central Letaba Gold Mining Company, Ltd., 3, 3a and 4 Norwich Union Buildings, Fox Street, Johannesburg, capital, £40,000; private company.

Munnik Myburg Asbestos, Ltd., 99 Stock Exchange Buildings, corner Holland and Fox Street, Johannesburg; capital, £7,000; private company.

Vereeniging Oil and Maize Products, Ltd., 65 President Street, Johannesburg; capital, £125,000; private company.

Last Year's Diamond Output.

In our last issue details appeared, drawn from the official Government publications, of the diamond output for 1921. The table printed showed that the total diamond production for the Union was 806,643 carats, valued at £3,103,448. Against this the total sales were 530,106 carats, valued at £2,161,796, or 81s. 7d. per carat. Compared with the year 1919—the record year—these figures, of course, show a tremendous falling-off. In that year the total sales were 2,648,931 carats, valued at £13,379,662, or 101s. per carat. In regard to the price per carat the year 1920 was the record year, an average of no less than 117s. per carat being received in that year. In 1919, as compared with 1918, the price received per carat almsot doubled. It is noteworthy that 1917 was the year when production reached its maximum, the total output for that year being 2,902,416 carats, which only sold for less than half of the sum realised for the output of 1919. The difference between the value of the output and of the sales for 1921 is nearly a million sterling, showing that sales were limited and the price per carat not allowed to fall below 81s. 7d. The following table is of value because it puts on brief record the economic history of diamond production and disposal in the Union since 1911.

	Total Sales.			
	Carats.	Value.	Per carat.	
Year 1921	530,106·69	£2,161,796	81	7
Year 1920	1,765,993·82	10,328,405	117	0
Year 1919	2,648,931·01	13,379,662	101	0
Year 1918	2,641,932·61	7,232,744	54	9
Year 1917	2,416,209·61	6,170,906	51	1
Year 1916	2,291,956·88	5,227,777	45	7
Year 1915	551,951·54	1,459,597	52	11
Year 1914	3,363,568·44	6,758,544	40	2
Year 1913	5,537,820·43	12,088,983	43	8
Year 1912	4,771,592·89	9,565,024	40	1
Year 1911	4,873,260·86	8,548,821	35	1

RYLANDS' STEEL WIRE ROPES

MANUFACTURED BY:
RYLANDS BROTHERS, LTD.,
WARRINGTON, ENGLAND.

SOLE REPRESENTATIVES FOR UNION OF SOUTH AFRICA:—
ARMSTRONGS & MAIN, LTD.,
84, Marshall Street,
JOHANNESBURG.

P.O. BOX 5988. 'PHONE 5203.

LARGE STOCKS ON HAND.

SPECIALISTS ..

IN THE MANUFACTURE AND DESIGN OF
STRUCTURAL STEELWORK.

ARMSTRONGS & MAIN, LTD.,
GENERAL AND CONSTRUCTIONAL
.. ENGINEERS, ..
84, Marshall Street,
JOHANNESBURG.

P.O. BOX 5988. TELEPHONE 5203.

Quarterly Reports.

FOR THREE MONTHS ENDED DECEMBER 31, 1921.

CONSOLIDATED MINES SELECTION GROUP.

Springs Mines.

The linear development amounted to 6,751 feet, of which 4,970 feet were on reef, averaging 26·05 dwt. over a reef width of 18·58 in. Of the footage on reef, 2,965 ft., equivalent to 59·6 per cent. of the sections sampled, were payable, and averaged 32·70 dwt. over 22·62 in. The above footage includes development work from No. 3 shaft. Total working costs, £181,404 19s. 5d. (per ton milled, 28s. 3·075d.) Net working profit, £90,788 4s. 9d. The payable ore reserve at December 31, 1921, was estimated at 3,056,231 tons, of an average value of 8·92 dwt. over an average stoping width of 61·54 in. Compared with the estimate as at 30th June, 1921, this is an increase of 53,259 tons, the value being 0·16 dwt. higher, while the width decreased by 0·99 in. The inch-dwt. figure is 549, as compared with 548 for the ore reserve as at the end of June. No. 3 shaft: The erection of the permanent steel headgear was commenced, and excellent progress had been made by the end of the quarter. The earthwork of the railway connecting this shaft with the reduction plant was practically completed. The erection of hoists, boilers and compressors is nearly completed. Extension of reduction plant: Work in connection with the extension of the plant has made satisfactory progress. The expenditure on lease area capital account for the quarter amounted to £61,855 2s. 2d. Under the agreement in connection with the acquisition of the lease area, the Consolidated Mines Selection Company, Ltd., took up during the period under review 5,000 shares in the unissued capital of the company at £3 per share to provide further working capital, making a total of 60,000 shares for the year 1921. The issued capital now, therefore, stands at £1,327,236. The estimated premium on gold recovered during the quarter was calculated by taking the price of gold as follows:—October, 103s. 0d. per fine oz., £15,782 18s. 11d.; November, 102s. 0d. per fine oz., £16,113 13s. 3d.; December, 95s. 6d. per fine oz., £9,794 19s. 10d.; total, £41,191 12s.; less estimated exchange on remittances, £2,629 5s.; total, £39,062 7s. The actual premium on gold for the three months ended November 30, 1921, was £5,786 12s. 8d. short of the amount estimated.

UNION CORPORATION GROUP.

Geduld Proprietary.

Total development footage, 4,745 feet; total footage sampled, 3,100 feet. The payable reef disclosures were as follows:—1,440 feet, having an average assay value of 20·2 dwts. over 37 inches. Mined, 174,130 tons; waste sorted out (equal to 19·56 per cent.), 34,052 tons; milled, 138,500 tons; ore added to surface dump, 1,478 tons; number of stamps, 100, ran 86·575 days; number of tube-mills, 8, ran 85·802 days; sands treated, 56,400 tons; slimes treated, 82,220 tons; total yield, 51,710·615 fine ounces; total yield per ton, 7·467 dwt. Working revenue (including estimated premium on gold, less realisation charges in excess of normal), £256,528 18s. 10d. (per ton milled, £1 17s.); working costs, £153,828 19s. 10d. (per ton milled, £1 2s. 2d.); total, £102,699 19s. (per ton milled, 14s. 10d.). Less amount over-estimated in respect of premium on gold produced during the period from about 26th August to 30th November, 1921, £5,166 3s. 4d. (per ton milled, 9d.); leaving a working profit of £97,533 15s. 8d. (per ton milled, 14s. 1d.) Sundry revenue, less sundry expenditure, £3,577 19s. 9d., making a total profit of £101,111 15s. 5d. The above amount of working revenue has been arrived at by taking the gold produced during the quarter at the following estimated prices: October, £5 3s.; November, £5 2s.; and December, £4 15s. 6d. per fine ounce. Estimate of normal income tax, £9,500; tax on dividend No. 14, £9,785 3s.; capital expenditure, £41,673 15s. 8d.; and excess development expenditure, £6,641 14s. Exercise of options.—Options over 151,796 shares were exercised during the period from 16th September to the expiry date of the certificates, viz., 31st December, 1921. The issued capital of the company will therefore be increased by £152,796 to £1,328,052. Altogether 178,052 options have been exercised out of a total issue of 180,000.

GOLD FIELDS GROUP.

Robinson Deep.

Tons milled, 183,800 tons; total yield in fine gold, 58,103·810 ounces; revenue from gold, £293,973 12s. 4d.; working expenditure, £238,344 15s. 11d.; working profit, £55,628 16s. 5d. Sundry revenue (debit), £661 11s. 10d. Total profit, £54,967 4s. 7d. Less expenditure on renewals, £3,343 10s. 6d.; interest on loans, £4,915 1s. 8d.—£8,258 12s. 2d. Estimated net profit, £46,708 12s. 5d. Gold in reserve, 1,495 fine ounces. Amount spent on capital account during the quarter was £43,136 0s. 2d. General remarks:—Value of Gold: The value of gold per fine ounce, less cost of realisation, during the quarter was taken at 102s. 6d. for October, 101s. 6d. for November, and at 95s. for December, 1921, or an average of 99s. 9d. per fine ounce, as compared with 110s. 6d. per fine ounce for the previous quarter. Premium on gold: The profit for the quarter includes the sum of £4,947 13s. 10d., which represents the amount by which the receipts on account of premium up to and including the settlement at 30th September, 1921, have exceeded the estimated realisations as containd in the monthly reports of the previous quarter. Native labour: The average number of natives employed was 4,628, as compared with 4,412 for the previous quarter. Development: The development footage for the quarter was 4,667 feet. The footage sampled was 2,477 feet, of which 73 per cent. was payable, as follows:—Main Reef Leader: 1,784 feet; reef width, 34·2 inches; assay value, 18·2 dwts.; inch-dwts., 622. South Reef: 30 feet; reef width, 13 inches; assay value, 27·2 dwts.; inch-dwts., 353. Values continue to be satisfactory in the lower levels. Satisfactory progress is being made with the new sub-vertical shaft.

Elandslaagte Collieries.

The annual general meeting of the Elandslaagte Collieries, Ltd., will be held on March 15 at Durban.

Box 3807. Tel. 5892.

WRIGHT'S ROPES

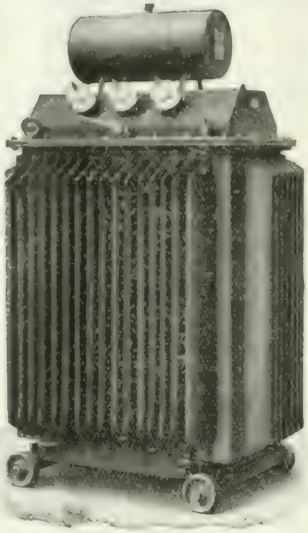
H. ALERS HANKEY - - - Sole Agent.

SIEMENS-SCHUCKERT
TRANSFORMERS

ALL SYSTEMS
AND VOLTAGES

Shewing Transformer, Type KOU.
Mounted on Wheels.

Tapping Switch Operated
by Spanner.



FITTED WITH OUR
PATENTED TAPPING
SWITCH OPERATED
FROM OUTSIDE THE
TANK, GIVING ± 5 %
VOLTAGE RANGE.

BRANCH OFFICE FOR SOUTH AFRICA:

C. KLEUDGEN, LTD.,
Corner of Loveday and Marshall Streets, JOHANNESBURG.
P.O. Box 1164. Telegrams: KLEUDCO." Telephone Cent. 5435

MILLAR DENNIS
ORIGINAL MAKERS OF

"BRADFORD INVERTED"

PLUG COCKS.

SOLE AGENTS:

GEO. CRADOCK
AND CO. (S.A.), LTD.

75-77, CULLINAN
BUILDINGS.

P.O. Box 316. Telephone 539.
Tel. Add.: "ROPES."
JOHANNESBURG.

Telegrams:
"NIVONIA," Johannesburg.

'Phones:
2196,—2197,—2193

J. & R. NIVEN, Ltd.,
ENGINEERS,
CONTRACTORS,
MERCHANTS.

BALATA BELTING
JAMES DAWSON & SON, Ltd.
BITUMEN SHEETING
GEO. M. CALLENDER & CO., Ltd.
BOILERS
PENMAN & CO., Ltd.
COAL CUTTERS AND CONVEYORS
JEFFREY MANUFACTURING CO.
COLLIERY PLANT
CAMPBELL, BINNIE, REID & CO.
DRILL STEEL
JOHN NICHOLSON & SONS, Ltd.
ENGINES, LOCOMOTIVES
ANDREW BARCLAY, SONS & CO., Ltd.
ELECTRIC LIFTS
A. & P. STEVEN, GLASGOW.
CRANES
BUTTERS BROS., GLASGOW.
HOSE, VALVES, SHEET RUBBER
THE LEYLAND & BIRMINGHAM RUBBER CO., Ltd.
LUBRICANTS
THOS. HINSHELWOOD & CO., Ltd
STEEL SCREENING
THOS. LOCKER & CO., Ltd.

Barsdorf's Buildings, Marshall Street,
JOHANNESBURG.

The South African Mining and Engineering Journal.

HEAD OFFICE: 176-180 Stock Exchange Buildings (2nd Floor), Fox Street, JOHANNESBURG, Union of South Africa.

Telephone **913.** P.O. Boxes **963** and **4573.**

Cables and Telegraphic Address: "MINING JOURNAL."

ANNUAL SUBSCRIPTION RATES: Oversea, £2; Union of South Africa and Rhodesia, £1 10s.; Local Delivery (Town only), £1 6s., payable in advance.

AGENTS FOR GREAT BRITAIN AND AMERICA: Argus South African Newspapers, Ltd., Byron House, 82-85, Fleet Street, London, E.C. 4.

Copies of this Journal are obtainable at all Branches and Agencies of the Central News Agency, Ltd., at all News Agents and Railway Bookstalls throughout South Africa, and at the London Agency as above.

CONTENTS. PAGE

Articles:

The Red Revolution 961
The Johannesburg Municipal Power Plant 965
Caving System of Mining.—II. 966
Last Year's Diamond Output 967
Quarterly Reports 969

Editorial:

The Revolution—and After 971

Engineering Section:

Producer-Gas Power Plant 975
Steam v. Petrol Tractors 977
Letters to the Editor 977

Trade and Industries Section:

The Week in the Mining Material and Engineering Trades 979

EDITORIAL.

THE REVOLUTION—AND AFTER?

Out of the general strike and the accompanying terrorism that threatened the Rand when our last issue was hurriedly prepared the feared revolution actually evolved and raged around us during the week. To-day we are all engaged in surveying the damage and counting up the cost with whatever coolness and mental detachment it is possible to command. Of course, the first feeling must be one of infinite relief and thankfulness that the Government has won so thoroughly and swiftly, and that the measures tardily taken have proved so wonderfully successful in wiping out the rebellion. In the words of the official statement issued on Wednesday, summing up the position: "Assistance was offered to the Government from every point in the Union, and people of all political convictions came forward to help the Government to put down what there is now no doubt to have been a social revolution by Bolshevists, International Socialists and Communists. The country had been saved from a terrible peril and bloodshed, revolution had been entirely suppressed, and, excepting a few who escaped capture by the Government forces, all revolutionaries have been taken prisoners. Upwards of 6,000 prisoners have been taken, and those responsible for murder and rapine will have to be dealt with. The Government gladly acknowledges the loyal assistance of citizens and burghers of all political convictions who came forward to assist the Government in restoring law and order, and sincerely hopes that the country will now settle down again to peaceful conditions." The actual story of events during the past week is recorded elsewhere in our pages, and will remain one of the most thrilling chapters in the chequered history of South Africa. To all who so magnificently responded to the call of the Government the gratitude of the whole country goes out, and to the relatives of those brave men who laid down their lives for the State the deepest sympathy is tendered. Burgher and Britisher, farmer and townsman, have fought side by side to defend the Union of South Africa against Bolshevism, and if it be true that "there is a soul of good in things evil," we may rejoice that the rebellion has served to reveal the essential unity and strength of South Africa.

Great as has been the cost, in blood and money, of the struggle of the past week, it may not have been in vain if it wins for industry in this country economic freedom, by which is meant freedom to run its business according to business principles. The ex-President of the Mine Managers' Association put the matter in a nutshell the other day when he said, speaking of the miners' strike: "Provided that the right of managers to conduct operations and organise the work on their mines in the most efficient and economical manner was safeguarded, or, in other words, that the manager was in a position to manage his mine without interference from trade unions, giving due consideration to the conditions of work of his employees, the industry would restart on a sounder and more permanent basis." Everything that has happened in the tragic interval that has elapsed since these words were spoken lends force and point to them. Industry in South Africa—not only mining but every activity bound up with and dependent upon it—must now start afresh, on a businesslike basis, and the era of "fancy pay" for power station men, tramway employees and the rest must be brought to an end. Big issues, such as the autocratic powers of the trade unions and the fixing of inelastic ratios of native to white labour, will have to be seriously reconsidered, and impossible restrictions on working and industrial expansion must now, if ever, be finally removed. Moreover, it may be that there are some lessons of the past few days capable of being turned to account. It is significant, for instance, that the printing trades successfully resisted the efforts of the agitators to enlist the workers in the mad adventure of a general strike. The reason, we understand, is to be found in the smooth working of the Industrial Council, composed of practical printing works managers and men who are wont to resolve their differences in common council. It may be that here is a valuable practical object-lesson for the mining industry, and that in some similar form of industrial council, consisting of practical mine managers on the one hand, and working miners on the other, is to be found the best ultimate solution of the differences between mines and men on the Rand. This may not be the most opportune moment for offering cut-and-dried expedients to obviate industrial disputes, but the success of the machinery evolved by the printing trade to overcome its industrial difficulties has been so marked a feature of recent events that we purpose in an early issue examining that machinery in detail and subjecting its functions to a critical analysis with a view to its possible application, even in modified form, to the mining industry.

So much for the big questions that still clamour for settlement on permanent, statesmanlike lines. Of more immediate interest is the necessity for return to work by all for whom work is available. The Secretary of the Industrial Federation has now, we are glad to see, asserted himself, and in a statement issued in the middle of the week makes a bold effort to call off the general strike, by proving its entire irregularity, and to bring the mining and industrial strikes to a finish by constitutional methods. In the meanwhile, the men on the mines are returning to work in large numbers, and as has already happened in the coal mining industry, the position will soon be less one of strike than simply of unemployment. The ability of the mines to absorb the men offering has, of course, been greatly curtailed, and with the closing down of some mines and the

[illegible]

Notes & News.

Central Mining/Rand Mines Group Meetings

An official notice dated March [illegible] has been issued calling the annual meetings of the subsidiary companies of the Central Mining-Rand Mines group for dates in May and June.

* * *

Features Held Over.

Owing to the absence of the printing staff for most of the week on military duty in connection with the rebellion on the Reef, several features of the paper will be missed from this issue. Next week, however, we hope the paper will resume its usual size and features.

* * *

Latest Metal Quotations: Gold 96s. 9d.

According to the latest cables from the London Metal Exchange standard copper closed at £60 12s. 6d. cash and £61 12s. 6d. forward; electrolytic copper at £68 cash and [illegible] standard tin at £142 17s. 6d. cash and £144 12s. 6d. forward; foreign lead at £21 cash and £20 17s. 6d. forward; quicksilver (middle) at £11; bar silver (spot) at [illegible], and gold at 96s. 9d.

* * *

The Robinson to Close.

The Robinson is to close down as a result of the strike, and liquidation will probably follow at an early date. In attempting to estimate the value of the shares a London contemporary says: "Taking the 40,000 Crown Mines shares at current price, the surplus of assets over liabilities should exceed £170,000. Realisation of the plant and equipment at 25 per cent. of its book value would add another £150,000, while the company has a certain amount of leasehold property. In all a return of 12s. or so per share seems likely in the event of winding up."

* * *

The Brakpan Tragedy.

The deepest sympathy of the whole community goes out to the Manager of the Brakpan Mines, Mr. C. B. Brodigan, and staff on the dreadful happenings at that property last week. The brutal murder of several members of the staff, including the manager's brother, Mr. V. Brodigan, has shocked the whole Reef. Mr. V. Brodigan was one of the most popular mining men on the Rand, and it will be remembered that he had rendered distinguished service in the Tunnelling Corps in France during the War. We sincerely hope that the other officials who have been seriously wounded will make a speedy recovery.

* * *

The Stock Exchange and the Rebellion.

No review of Stock Exchange activity appears in this issue, for the reason that the Exchange was closed on Friday week and remained closed during the rebellion. Proximity to Marshall Square Police Station, the Municipal Power Station and the "no man's land" abutting on Fordsburg lent a certain amount of strategical importance to the prominent New Exchange building, and the sorely taxed regular police force found itself unable to afford it the protection it greatly needed. Efforts made on the morning of the 11th to raise a volunteer force from among the members proved fruitless owing to the fact that, the Exchange being closed that day, most members had remained away or "joined up" with other defence units. The Stock Exchange was thereupon put under the control of Colonel Hamilton, D.S.O., M.C., who detailed half a score of Special Constables, under Captain Phibbs, to defend the building and its approaches. The Exchange is expected to re-open for business on Monday next.

* * *

The late Captain Carey Thomas.

There is something peculiarly sad in the sudden death last week from a sniper's bullet of Captain W. W. Carey Thomas, the intrepid adjutant of the South African Air Force. The late Captain Carey Thomas had a most distinguished flying record during the War and attained the rank of major in command of the 26th Flying Squadron which served in East Africa. Before the War he had a staff appointment on one of the Rand mines, and he was well known and most popular on the Reef. Only lately he had decided to adopt the air service as a profession, and he had been made adjutant at Roberts Heights of the S.A. Air Force with the permanent rank of captain. Like his gallant friend the late Colonel F. J. Trump, of the Ferreira Deep, he came of a well-known Welsh family, and the sincerest sympathy of the mining community of the Rand will go out to his mother and family at Home.

* * *

Railway Electrification Systems.

The following extracts from a paper submitted to the Swiss Electrification Commissioner by Herr L. Thorman, Chief Engineer of the Loetschberg Railway, is of interest, in view of the recent press agitation in South Africa in favour of the three-phase system of electric traction as adopted in Italy. It is quoted in the latest Bulletin issued by the General Manager of the South African Railways. "At the outbreak of War the electrified main lines belonged mainly to the Italian and the Prussian State Railways, the former electrified by the three-phase, the latter by the single-phase system. Technically, both systems have been successful. In no other European country does there appear to be any desire to follow the Italians. Technically, it can be said that all three systems can be made satisfactory, but that the three-phase system on account of the double overhead conductor would be used only if neither of the others existed. This was really the case when the Italians began to electrify their railways. For Switzerland, therefore, it is a question of single-phase or continuous current, and the choice will mainly depend on economic conditions." This, says Sir William Hoy, supports what has already been stated. Every day brings fresh evidence of the advantages of, and of new converts to, the continuous-current system proposed to be adopted in South Africa.

* * *

Coal By-products.

An interesting reference to coal by-products is made by Sir William Hoy in his latest monthly Bulletin. He writes: "Attention has been directed to the desirability of designing the new power station plant to be erected in Natal for railway and industrial purposes, so that it can also be used for the manufacture of commercial by-products from coal distilled at low temperature. Coal treated in this way can be converted into commercial commodities valued at many times the original cost of the coal. The principal products recoverable are motor spirit, naphtha equivalent, dehydrated tar, fuel oil, pitch, etc. In addition to yielding other valuable commercial products, coal distillation will produce sufficient liquid fuel to render South Africa independent of oil imports—a very important consideration in view of the cost of liquid fuel. In the United Kingdom, several processes have been tried. Experiments on a commercial scale are proceeding, and sufficient progress has been made to justify the expectation of success in by-product recovery at the large electric power stations. Rapid strides have been made in Germany since the War in the economic utilisation of coal for by-product production. One process now on trial is producing, practically from any kind of coal, motor fuel, lubricating oils, lamp oil, paraffin wax and other valuable products. Developments are being watched with interest with a view to the further exploitation of the vast coal resources of the Union, in conjunction with the super power stations to be erected for railway and industrial purposes."

* * *

Orange River Asbestos Mines, Ltd.

There has been introduced to the London public the Orange River Asbestos Mines, Ltd., as "a sound investment, carrying a 10 per cent. preferential dividend, with participation in one-half of the additional profits after the 10 per cent. has been paid." The offer is made of 30,000 of the preference shares of £1 each at par, which will be allotted to applicants direct from the company's London offices, 3, London Wall Buildings, E.C.2. The property consists of 14,000 acres of asbestos-bearing land, adjoining the mines of the Cape Asbestos Co., Ltd., and is within 16 miles of the main line of railway. The company's mining consultant (Mr. C. W. Cubbon, B.Sc., F.P.C., M.S.P.), in a report, estimates the property to contain over 500,000 tons of asbestos. The authorised capital is £100,000, divided into 95,000 10 per cent. participating preference shares of £1 each and 100,000 ordinary shares of 1s. each—the whole of the latter, in addition to 25,000 of the former, having been already allotted—the present being, as already stated, an offer of a further 30,000 shares. The chairman of the company is Sir Thomas Hungerford Holdich, K.C.M.G., who has, as his colleagues, Sir Alliston Champion Toker, K.C.B., Capt. Frank H. Jones, D.L., and Mr. Charles H. Lawson, F.A.A.

* * *

American Capital and South Africa.

Another manifestation of the interest taken in South Africa by American capital was afforded by some statements made in the House of Assembly by the Minister of Railways this week. One member of the House was anxious about the future of Port Nolloth and its hinterland. Replying to him Mr. Jagger stated that the Cape Copper Company had asked the Government to buy the Port Nolloth Ookiep Railway, but before any action was taken the House would have an opportunity of considering the report of the engineers. A definite offer (stated the Minister) had been made by American bankers and financiers to finance the construction of a railway from Klaver Station to Van Rhynsdorp, Garies and Springbok, over the Orange River, linking up with the existing line to South-West Africa, or running direct to Luderitzbucht, and also the construction of a branch line from Van Rhynsdorp to Calvinia, provided the Union Government would grant a concession on the following terms: (a) Concession to be for a term of 25 years with the right at the expiration thereof to renew for a like period; (b) the Government to have the term of 2 years with the right at the expiration of the first or second term of 25 years upon having given twelve months' previous notice of their intention to do so; (c) the Government to guarantee a minimum of 5½ per cent. per annum on the total capital expended; (d) all materials for the railway to be purchased in America save such as are obtainable in the Union. "The Government," said Mr. Jagger, "has given careful consideration to the matter, but is not prepared to accept the offer."

* * *

The Chamber and the Augmented Executive.

After the issue of this paper last week, the Chamber of Mines took notice of some criticisms levelled at it, and published the following statement, which we put on record. At the suggestion of General Smuts, the Chamber of Mines arranged to restart the mines, Government giving the assurance that all willing to work would be given protection, and that their liberty of action would be safeguarded. This invitation was based on the conviction in the mind of the Prime Minister, shared by the Chamber, and proved correct by subsequent results, that there existed a large body of miners, perhaps even a majority, who were willing to return to work, who were therefore not represented by the Augmented Executive, and who needed protection, as they were likely, in defiance of law and liberty, to be forcibly prevented from returning, as has actually happened. The mines were restarted on this invitation. If this action on the part of the Government and the Chamber meant anything, it meant a repudiation of the Federation as spokesmen and leaders of the miners as a whole. What more, in effect, did the Chamber's letter say than this? What else, without betraying those men who were willing to return, and who have returned, could have been said? Men were returning in increasing numbers, in proportion as the belief grew that they would be given effective protection. Had such protection been really effective, many thousand would have returned. The Chamber, therefore, in its letter, leaving on one side the question of particular phrases, on the advisability whereof a difference of opinion may exist, said nothing but what was in its view, and presumably in that of the Government, the right policy. The Chamber is now, as always, quite prepared to meet the union leaders and listen to what they have to say, but unfortunately the terms whereon the mines can be placed in a position to continue to give employment, are governed by economic and not debatable considerations.

* * *

Export Credits.

The Overseas Trade (Credits and Insurance) Act, 1920, modified by the Trade Facilities Act, 1921, established a credit of £26,000,000 sterling to be devoted to the extension of overseas trade. In the first instance, the scheme applied only to foreign countries, and later was extended to the Dominions and Colonies, in connection with which latter development this organisation exercised some influence. The credit was established first for one year, and then for a definite period extended to three years. The scheme expires in September next, and there is, therefore, a comparatively short time available for overseas buyers to take advantage of the credit facilities which are now open to all reliable firms desirous of purchasing British goods. Under this scheme the British manufacturer or exporter of British goods can draw on buyers at twelve months, or longer dates, on return of the bill; subject, of course, to satisfactory enquiries as to both parties. The Department of Overseas Trade will then enable the manufacturer or exporter to discount the papers at Treasury Note rates. In the case of a twelve months' bill, in the event of the purchaser failing to pay, 57½ per cent. of the loss is recoverable from the manufacturer or exporter, and the rest of the charge is borne by the Department of Overseas Trade. A small commission is charged for the accommodation, and the scheme is self-supporting so far as the British Government is concerned. It is simple and prompt in its operation, and does not interfere with the ordinary routine of trade and finance, and, of course, its great advantage is that with the signature of the British Government on the back of the bill, it enables the very lowest rate of discount to be automatically obtained. In the present financial stringency common to all parts of the Empire, it will enable the overseas buyers to stock those lines of British goods for which they can see in the near future a definite turnover, and there is no doubt that if overseas buyers will take immediate advantage of these important facilities, the British Government will give an extension of life to the scheme to enable the whole credit of £26,000,000 to be exhausted.

The South African Gold Trust has declared a dividend of a shilling per share free of income tax.

* * *

The Consolidated Gold Fields Co. has postponed declaration of the dividend on the second preference shares due on April 1, but it is understood that the postponement may not be of long duration.

Robert Heath & Low Moor, Ltd.,
Sole Manufacturers of
LOW MOOR IRON AND RIVETS.

SPECIALITIES:
COLD BLAST PIG IRON
HAULAGE GEARS
PUMPS
WINDING ENGINES
OVERWINDING GEARS
PIT TUBS
COLLIERY PLANT AND BUILDINGS
AXLES AND FORGINGS
DROP STAMPINGS
CHILLED AND GRAIN ROLLS
CASTINGS UP TO 20 TON EACH

SOLE AGENTS IN SOUTH AFRICA FOR PRODUCTS OF
LOW MOOR WORKS:
SAMUEL OSBORN
(S.A.), LIMITED,
'Phone 4673 JOHANNESBURG. Box 3162.

ROBINS "PERFEX" BALANCED SCREENS.

¶ Give favourable results on the fine screening of a variety of materials—Coal, Coke, Fertiliser, Sand and Gravel, Slag, Stone, etc.

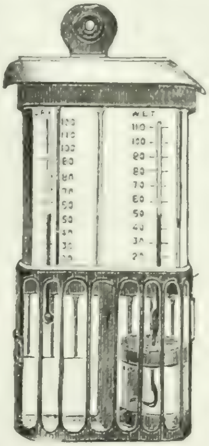
¶ They supplement the Robins Rotary Grizzly, and have its characteristics—low power consumption, freedom from vibration, high efficiency and capacity, small headroom.

¶ **Moreover, they have a positive screening action on damp or wet material, and cannot plug up.**

¶ In all these respects they are an improvement over revolving or shaking screens.

For full information address:
ROBINS CONVEYORS (S.A.), Ltd.
(Head Office: Robins Conveying Belt Co., New York, U.S.A.)
Engineers, Founders, Machinists
Conveying & Hoisting Machinery
Materials-Handling Installations and Appliances
50, STELLA BLDGS., RISSIK & NEW STREETS
BOX 4736, 'PHONE 4182, JOHANNESBURG

DAVIS-MADE
HYGROMETERS



FOR USE IN MINES TO ASCERTAIN THE AMOUNT OF MOISTURE IN AIRWAYS.

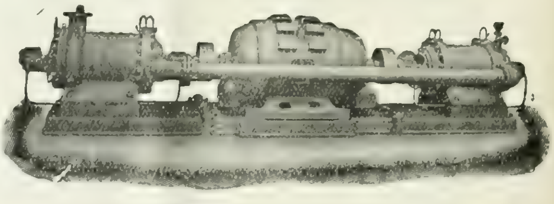
Fitted with porcelain scales, tubes divided on the stems, strong hinged metal protecting case.

Special leaflets, illustrating and describing the many other good things which are manufactured by **John Davis & Son (Derby), Ltd.**, will be gladly sent on request.

Sole South African Agents:
BARTLE & CO., LTD.,
LOVEDAY HOUSE. P.O. Box 2466
Phone 3553 Wires: "FAGGOT."
JOHANNESBURG.
AND AT
P.O. Box 444 . . . KIMBERLEY
P.O. Box 1228 DURBAN

DAVIS-MADE MEANS HIGHEST GRADE

SULZER
HIGH-LIFT CENTRIFUGAL
PUMPS.
For Mine Drainage, Waterworks, Etc.



Pumping Set suitable for lift of 2,500 ft.

LARGE LOCAL STOCKS IN MEDIUM AND LOW-LIFT PUMPS.

For particulars apply to:
RICE, WILSON & HERD,
86, 87, 88, 96, Standard Bank Chambers, Commissioner St.
P.O. Box 930 Telephones 2299 & 2300. JOHANNESBURG.
Also South African Agents for
CALLENDER'S CABLE & CONSTRUCTION CO., LTD.
BRITISH THOMSON-HOUSTON Co., LTD., etc., etc.

ENGINEERING SECTION.

Producer-Gas Power Plant.

A paper entitled "Some Observations on a Producer-Gas Power Plant," by H. S. Denny, C.B.E., and N. V. S. Knibbs, B.Sc., of London, was read before the Institution of Mechanical Engineers on January 20. The following are extracts from this paper:—

No apology is needed for bringing up the subject of coal utilisation or any of its branches, provided always that the matter submitted is new and pertinent to current developments. Coal is one of the main bearer stones in the structure of British industry, and to-day more than ever in the history of that industry there exists the need of a thorough and searching investigation in the economics of its production and use. The cash value of the British thermal unit is three times as great to-day as it was before the War, and wasteful, careless, or inefficient usage is no longer to be countenanced as a permissible evil. A stage has been reached where the incidence of fuel economy is so marked as to call automatically for the maximum efficiency in usage, and the latter must be secured if British industries are successfully to cope with foreign competition. It is therefore necessary to examine rigorously the fundamental features of all processes of coal usage before accepting them as applicable to present-day requirements. Whether it be for domestic use in the household grate, or under the boiler for steam raising, or in the coke-oven or gas-producer, the call for investigation is acute, and it becomes the duty of every consumer not only in his own, but in the national interest, to see that he is getting a fair and economical percentage of actual work done for every pound of coal he uses. In the past there has been great waste; the average efficiency has been so low that more than 90 per cent. of the work done in mining, hauling, washing, transporting and burning coal has been thrown away, and even to-day the average performance shows little improvement. If it be allowed for one moment that the loss could be reduced to 80 per cent., the potential value of the coal output and, further, the coal reserves, would be at once doubled. The advantages are too obvious to require discussion.

It is outside the scope of this paper to pursue further the broad aspect of the question. These remarks are intended to indicate that if every method of coal consumption were properly investigated and the results fairly and honestly recorded, it would not be so difficult for the prospective consumer in any branch of industry to decide upon the right method for his particular requirements; and in order to protect the unskilled or the uninitiated the day will come when, in the national interest, the manufacturer of coal-consuming machinery will have to satisfy competent authorities that his plant reaches some given standard of efficiency before he will be allowed to deal with it commercially.

With these introductory remarks, the authors would explain that in 1917-1919 the control of a large capacity Mond gas-producer plant coupled up to a gas-engine plant of equivalent size came under their control, and a unique opportunity for carrying out a special investigation thus being opened, it was decided to take advantage of it. A properly organised scheme of investigation was decided upon, and the greatest care was exercised in compiling the results recorded in the period; and they were fortunate in having at their disposal a highly competent chemical and engineering staff. It is necessary to make it clear that the facts and figures submitted apply only to the particular plant under consideration—excepting where otherwise stated—and the sole desire of the authors is to place upon record the results and conclusions arrived at, in the hope that they may be of service to others engaged on similar problems.

Conclusions.

In reviewing the foregoing, it may be summarised briefly as follows:—

(1) *Mond Gas*—

(a) That a reasonably high ammonium sulphate recovery demands low temperature and correspondingly low producer gasification capacity, whilst simultaneously the gas produced is less suitable for power purposes than that made in non-recovery producers.

(b) That at full load a gas suitable for the engines was obtained only at the sacrifice of ammonium sulphate recovery.

(c) That a large amount of steam is used, demanding a considerable boiler installation and fuel usage.

(d) That the capital outlay and running cost of the plant represent a combined charge which can only be counterbalanced by a comparatively low-priced fuel, and a high market price for the by-product.

(2) *The Gas-Engine*—

(a) That steady running and reliability are obtainable given the necessary skilled attention, and given a gas of even character and value.

(b) That the time lost for repairs is almost negligible.

(c) That oil consumption can be kept at a low level, and one that compares not unfavourably with steam practice.

(d) That relatively low hydrogen and high carbon monoxide proportions make for steadier and cheaper running than when the order of these constituents is reversed.

(e) That efficiency falls very rapidly as load decreases.

(f) That a thermal efficiency of 26 per cent. at full output, and with a steady suitable gas supply, is obtainable.

(g) That natural gas, blast furnace gas, and coke oven gas represent a wide and favourable field for the gas-engine.

(h) That the gas-engine plant as a whole gives little trouble and satisfactorily stood up to its tests on full load and part load, and also under ordinary working conditions.

A Corner in the New B.G.E.C. Fittings Showrooms

REALISING the value of display and demonstration, we have arranged attractive and comprehensive exhibits at our Showrooms, where a magnificent variety of Electric Light Fittings, and Domestic Electrical Requisites may be inspected and explained.

The Showrooms are placed entirely at the disposal of Contractors who may desire to send their clients for personal selection, whilst the policy of the Company safeguards the individual interest of the Trader.

We extend to you a cordial invitation to inspect the Showrooms.

The British General Electric Co. Ltd.

Representing THE GENERAL ELECTRIC CO., LTD., of England

Capetown
83/89, Castle St.
Box — 1327
Phone — 1401/2
Tel. :—"Induction"

Head Office :—
Johannesburg
Corner Loveday and Anderson Streets
Box 2406 Phone 4242/3 Tel.: "Current"

Durban
56, Field Street
Box — 922
Phone — 1793
Tel. : — "Ampere"

Agents at:—Port Elizabeth, East London, Maritzburg, Bulawayo, Delagoa Bay, Beira, Dar-es-Salam, Tanga, Zanzibar, Mombasa, Nairobi, Uganda, Etc.

General Conclusions.—The authors have endeavoured to make it clear that the producer plant under consideration was a poor exponent of the system because of its age, which necessary involved some principles of obsolete practice and much time-worn material. As a plant from any modern standpoint, it therefore stands condemned on these grounds alone. But apart from the actual mechanical arrangements of this particular plant they have endeavoured to ascertain the merits of the principle of gasification with ammonia recovery, and on certain broad lines have indicated that its profitable application is limited to given cases in which low-priced coal and high-priced by-products are inseparable features. Even then the work tends to prove that the simultaneous production of a high-grade gas for power purposes with a maximum yield of ammonium sulphate is not economically feasible, and that either one must be partly sacrificed to produce the best return of the other.

Great pains were taken to get accurate figures throughout, and particular attention was given to the determination of the column of the gas. This, being a fundamental in the computation of the results, was very necessary. They have not seen anywhere before the combination of calculations used in this connection. Their experience does not confirm the suggestion that good results are obtainable from low-grade slack unsuitable for other purposes, whilst the outlook for high prices for ammonium sulphate appears to be problematical in view of the projected synthetic ammonia plants. Furthermore, they have found the process to be by no means what could be desired as fool-proof or simple.

To avoid any possible misunderstanding, it should be stated that they are dealing with ammonia-recovery systems only, and the results are not in any way applicable to ordinary gas-producers of either the pressure or suction type. The excess steam used in the recovery process constitutes a distinct dividing line. The gas-engine plant is, of course, a unit quite separate from the producer plant. It was a thoroughly workmanlike up-to-date installation, and satisfactorily discharged its duties.

Their contentions and arguments and statements are uncoloured by any glint of prejudice, and for whatever they are worth they submit them with this assurance. In characterising this particular Mond plant as a poor one, they desire to state that there were sufficient reasons for that condition, but they are not judging the principle wholly on that or any other extraneous grounds. Their object has been to elicit from the available data, first, what the efficiency of the plant was, secondly, where and why it failed in economy, and thirdly, what bearing this evidence has on the future of Mond gas. In arriving at their conclusions they have spared no effort to get at the truth, and any errors that occur must be attributed to faulty judgment rather than lack of industry or fair purpose.

The Truth about Luipaardsvlei Estate.

The Luipaardsvlei Estate Company, in a notice to the shareholders, states:—"The strike of the white miners on the Witwatersrand goldfields, which has been in progress since January 10th, has brought mining operations on the company's property to a standstill as from that date. As the cost of retaining the full native labour force and staff of officials, and keeping the mine free from water, would quickly have exhausted the limited resources of the company, the Board have had no alternative but to cable instructions to close down the mine. This is in agreement with the views of the Johannesburg committee. All officials have been given one month's notice from January 31st, and the natives are being repatriated or transferred as speedily as possible. Pumping is still being continued with the assistance of the mine officials. The property has been worked in four separate sections, and unless it should become possible to resume work on the whole of it, the Board will in due course consider the feasibility of reopening the East Battery Reef mine, which is an outcrop, and of somewhat higher grade than the other sections of the property."

Letters to the Editor.

A S.A.M.W.U. PESSIMIST.

To the Editor, S.A. *Mining and Engineering Journal.*

Sir,—It is rather callous when so many work pals are suffering to think of the sterner question before us—the solution of quarrels and differences in the mining world. Viewed industrially, politically, ethically, socially or otherwise, our difficulties seem insurmountable. My object in writing you is to refer you to an article of mine in your Journal of date 29th September, 1921. You evidently thought it of sufficient merit to publish and pay me for it. Now I wish to state that I wrote all mine managers in the Jeppes district offering any details of working the schemes referred to, and, excepting a reply from the manager of the New Goch, others did not reply. I may state that I sent a copy to the Prime Minister.

I do not wish to be guilty of booming myself, but in view of the many statements made that the workers put up no concrete suggestions, I refer to the above incidents. For my part I think that nothing can be done for low grade ore, because what with the Macarthur-Forrest cyanidation process, oil flotation process and inventions giving a 98 per cent. extraction, it is indeed difficult to put up concrete suggestions. The alternative put up by the Chamber is cheap labour. Their technical experts are also silent. Oceans of ink have been spilt lately on the problem, mainly to conceal the issue. If our 4,000 men are redundant to-day because of the increasing skill of the native, in another decade 10,000 white men will be redundant—skilled artisans, etc.—and even mine managers. The word "halt" is to-day everywhere in the air in Johannesburg's streets. Let us all say halt to the Chamber's "concrete suggestions."—Yours, etc.,

L. P. SHERIDAN.

Secretary, Jeppes Branch, S.A.M.U.

[We cannot share, though we may print, this correspondent's pessimistic views.—Ed.]

Modderfontein Deep Levels.

Total development footage, 2,280 feet; total footage sampled, 1,270 feet. The payable reef disclosures were as follows:—840 feet, having an average value of 15·9 dwts. over 44 inches. Mined, 165,474 tons; waste sorted out (equal to 22·74 per cent.), 37,624 tons; milled, 128,200 tons; number of stamps, 70, ran 75·402 days; number of tube mills, 8, ran 76·253 days; sands treated, 50,300 tons; slimes treated, 78,500 tons; total yield, 70,843·414 fine ounces; total yield per ton, 11·052 dwts. Working revenue (including estimated premium on gold, less realisation charges in excess of normal), £351,742 11s. 1d. (per ton milled, £2 14s. 10d.); working costs, £136,453 19s. 7d. (per ton milled, £1 1s. 3d.); total, £215,288 11s. 6d. (per ton milled, £1 13s. 7d.) Less amount over-estimated in respect of premium on gold produced during the period from about 26th August to 30th November, 1921, £7,367 1s. 3d. (per ton milled, 1s. 2d.), making a working profit of £207,921 10s. 3d. (per ton milled, £1 12s. 5d.). Sundry revenue, less sundry expenditure, £4,856 13s. 1d., making a total profit of £212,778 3s. 4d. The above amount of working revenue has been arrived at by taking the gold produced during the quarter at the following estimated prices: October £5 3s.; November, £5 2s.; and December, £4 15s. 6d. per fine ounce. Estimate of normal income tax and provincial tax, £23,500; tax on dividend No. 14, £32,925 15s. 3d.; and excess development expenditure, £939 19s. 10d.

Steam v. Petrol Tractors.

With reference to a paragraph appearing in our Mining Material and Engineering news article entitled "Steam Tractors" as used by the railways in our issue of January 28, 1922, the representative of a large American mechanical transport corporation, who is at present visiting South Africa, writes:—

By the casual reader reading the article we believe that certain incorrect conclusions might be assumed.

On consultation with the railway official by whom the report was tabulated for the General Manager, we find that the comparison in cost applied merely to the difference between the coal consumption of the steam tractors, and the petrol consumption of the motor lorries. Your figure is incorrect in that you state that the quantity of coal consumption in one day by twelve of the new tractors costs very little more than the daily petrol consumption of a single motor lorry; the figure given by the railway is 1 to 7.

At the time tabulated the cost of the railway coal was about 4s. at the pit head, per ton, versus the petrol cost averaging 5s. per gallon.

The new rubber tyre steam tractors which are used for hauling 5 to 6 trailers are compared with the ordinary load carrying motor lorry, approximately 12 years' old. The comparison is not even made with a motor hauling trailers, although there are many railway motor lorries in this type of service in Johannesburg; we suggest that the comparison would be reversed in favour of a petrol tractor if a high grade one were used, designed solely for hauling trailers, as has been the steam tractor in question. The petrol tractor is so much easier to operate, is so much faster, and has so much less mechanical difficulty, that we are confident the tonnage hauled would be in excess of that hauled by a similarly equipped steam tractor.

"With the present low cost of petrol and the reduced labour and investment cost of the petrol lorry, we are confident the comparison would be far from as odious as might appear from your article.

"We beg to offer certain advantages and disadvantages of steam transport verses motor transport. These offerings are naturally biassed; we suggest your using them as your best judgment may dictate, but trust you will realise the fairness of our suggestion, that you correct the article in question, and make it a little less inclined towards closing the argument as towards respective value of steam and petrol as the superior type of mechanical transport.

"Advantages.—The particular advantage, and in fact the only advantage in conjunction with steam transport is the cheapness of fuel.

Disadvantages.—(1) High capital investment; (2) difficulty in finding a competent steam engineer to operate the vehicle and replacing men when on vacation or leaving the job; (3) work is very distasteful to the average mechanic, due to the machine being cumbersome, awkward to steer, extremely hot in warm weather, dirty and disagreeable; (4) very hard on tyres necessitating great expense in replacement thereof; (5) large proportion of load-carrying capacity of vehicle used up in carrying fuel; (6) vehicle very hard on roads; (7) where heavy grades and long distances are covered it is necessary to have a source of supply of water every few miles; (8) extremely heavy mechanical maintenance; (9) vehicle very dirty, making it inadvisable to carry commodities which should be kept in a condition of immediate cleanliness; (10) it takes ½ to 1 hour to get up a proper head of steam every day before being able to start the vehicle; (11) Municipalities will, in the near future, institute regulations against either the use of steam wagons in the congested parts of South African cities, or restrict the fuel burned in same to charcoal.

"The fact that there is to-day an unimportant difference between the respective prices of petrol in South Africa and in the United States, would indicate that the United States conclusion that there is no real economy in the use of steam wagons for rapid transport will surely be drawn by South Africa.

"To-day we know of no individual steam installation or fleets in any part of the United States."

Mining Men and Matters.

Mr. H. S. Denny is on a professional visit to Angola.

* * *

The seventh railway conference of Southern Rhodesia will be held in Bulawayo during April next.

* * *

The twenty-seventh annual general meeting of the Rhodesia Chamber of Mines will be held in Bulawayo on Wednesday, the 22nd March, 1922.

* * *

The monthly meeting of the Geological Society of South Africa, called for next Monday, has been postponed till further notice.

THE HYDROGEN, OXYGEN & PLANT CO., Ltd
(REGISTERED IN ENGLAND).
99, PARK ROAD, NEWTOWN, JOHANNESBURG.

Manufacturers of .. .. Hydrogen and Oxygen in bulk for Industrial and Medical purposes. .. ..

Sole Representatives and Stockists for the Alloy Welding Processes, Limited, LONDON.

Manufacturers of .. .. Electrodes and Plant for Oxy-Acetylene and Electric Welding purposes. .. ..

General Managers in S.A.:—
Messrs. DOWSON & DOBSON, LIMITED, JOHANNESBURG.

ALL COMMUNICATIONS TO BE ADDRESSED TO THE WORKS.

'Phone 3053. - - - Telegrams: "HOPCO." - - - P.O. Box 5404.

TRADE AND INDUSTRIES SECTION.

Week in the Mining Material and Engineering Trades.

RED REVOLUTION'S ROUT IRON AND STEEL UNITED STATES STEEL CORPORATION'S REDUCED EARNINGS BRITISH ENGINEERING DISPUTE COAL COPPER OIL UNION'S IMPORTS AND EXPORTS, 1920-21 TIMBER AND BUILDING MATERIAL PRICES METAL MARKET QUOTATIONS.

The prediction made in these notes last week that the crisis would be of short duration has fortunately proved true. But the tragedy which most of us have lived through during the past few days, although generally known in respect of its more salient features, has yet to be written in full. Whatever opinions may previously have prevailed as to supineness on the part of the Government in coping with the anarchistic eruption here and they were both numerous and weighty the community is now loud in its praises of the masterly manner in which General Smuts assumed command of the situation at its most critical moment and promptly reduced to order a state of affairs which was rapidly leading to chaos and a veritable red ruin of Bolshevism for Johannesburg and the whole of South Africa.

It serves, however, no good purpose, nor are the columns of this commercial article perhaps a fitting place, to dwell unduly upon the murderous and cold-blooded tactics pursued by the ruffianly crew which terrorised the Witwatersrand district for such a long time. Those diabolical actions will no doubt undergo a strict investigation in the proper quarter in due course, and the instigators of and participators in such crimes receive where possible adequate punishment for the horrible excesses that have darkened the pages of South Africa recently. The occurrences on the Rand during the past week have opened the eyes of the community to the great peril in which it stood—a state of things almost incredible of belief, but which, had it not been checked at the psychological moment, threatened to plunge the Rand and indeed the whole of South Africa into anarchy and Bolshevism. From the captured documents now in the possession of the authorities it is felt that the regulations regarding alien immigrants must be considerably tightened up. It is now (but not before) known that the recent rebellion and attempted subversion of the Government was due more directly to Bolshevik agents and their pernicious undermining tactics than to any overt action on the part of the strikers themselves as a body. In the case of their so-called leaders that is another story, a very unedifying one, but which will have to be probed to the bottom.

Out of the confused and bloody welter of the week's nightmare, apart from the successful breaking up of the rebellion, the most gratifying feature has been the splendid response of the Union to the appeal of the Government for support in this crisis—support freely given irrespective of political leanings and of personal convenience.

Opinion is now unanimous that failing the strong and determined attitude adopted by the Chamber of Mines in their reply to the Federation's last request, another pretext would have been found for launching the recently abortive rebellion. A very prominent merchant said the progress of the revolutionary movement here had been appalling; the seeds, he thought, had been planted in fruitful soil, and unless drastic steps were taken to eradicate them we might yet live to witness a more surprising revolution here than the one just scotched. The evil was, of course, caused by international socialists and their secret and hateful propaganda, and until these were stamped out South Africa would be liable to recurring outbursts. This matter, he said, would have to be very carefully handled if we were in future to be free from similar troubles. He thought that the beginning of next week would see things returning to normal, and that then a good many of the strikers would be returning to work—sadder but wiser men. He stressed the fact that the country had recently been called upon to decide whether it should be governed by revolutionaries or by law and order, and that the response had been overwhelmingly in favour of constitutional government, proving also that notwithstanding all talk against General Smuts and the Government all right-thinking citizens of the Union —the large majority—were unequivocably with the Government as it is at present.

Another commercial man thought that the present week would see the back of the strike broken, and that probably some 75 per cent. of the men would be fighting this time to get back to their jobs. But the clearing up of the aftermath of this two months' upheaval would take a very long time and tax the resources of the country to the utmost. The general opinion in mining and commercial circles is that, with the smashing of the rebellion and the removal of the S.A.I.F. leaders the dispute between the miners and the industry should now be comparatively easy of settlement—a consummation devoutly to be wished!

Iron and Steel.

Business in these this week has been brisk and of a satisfactory nature, inasmuch as, in the shape of ammunition, iron and steel have helped to quell the rebellion and thus pave the way to the resumption of ordinary peaceful trading later on. Paradoxically, however, although brisk, business has not been of a lively character.

Latest (nominal) quotations.—Dunswart iron, 22s. per 100 lb. basis price; Union Steel Corporation, Ltd., 22s.; imported iron and steel, flats, small, 33s. to 40s.; larger sizes, 30s. to 38s.; $\frac{1}{4}$ in. and 5-16 in. rounds, iron and steel, 37s.; $\frac{3}{8}$ in. iron, 30s. to 32s.; $\frac{1}{2}$ in. and $\frac{5}{8}$ iron, 31s.; steel, 37s.; $\frac{3}{4}$ in. round iron, 30s.; steel, 33s.; $\frac{7}{8}$ in. and upwards, imported, round iron and steel, 30s.; channel and joists, 35s. 6d.; shafting, $\frac{5}{8}$ in. to 2 in.,

ASBESTOS
PROPERTIES and FIBRE
ARE PURCHASED BY
AFRICAN ASBESTOS MINING CO., LTD.
P.O. Box 504, BULAWAYO
Telegrams: "Safasco," Bulawayo 'Phone No. 356
Johannesburg Correspondents:—HUGGINS & CO., LTD.
Consolidated Building —— JOHANNESBURG
Telegrams: "Turbro" P.O. Box 5185 'Phone 574

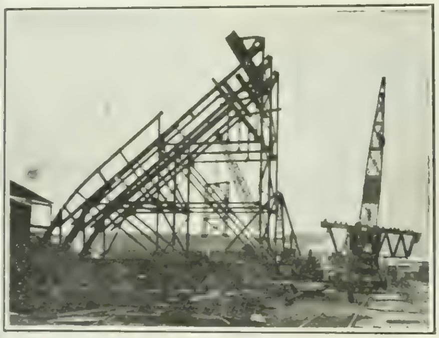
HEAD, WRIGHTSON & Co. (SOUTH AFRICA), Ltd.

63-66, STANDARD BANK CHAMBERS,
COMMISSIONER STREET,
JOHANNESBURG.
P.O. Box 1034. 'Phone 3524.

Colliery Plant, Gold Mining Plant, Coal Washing, Conveying Plants, etc.

Coal Handling, Screening and Washing Plants.

"Marcus" Screens.
"Nota Nos" Coal Washers.



Illustrations show part of an [illegible] gantry for the [illegible] Construction.

STRUCTURAL STEEL-WORK.

BUILDINGS, BRIDGES, ROOFS, TANKS, HEADGEARS, ETC

Sole Agents for HELICAL REINFORCING RODS.

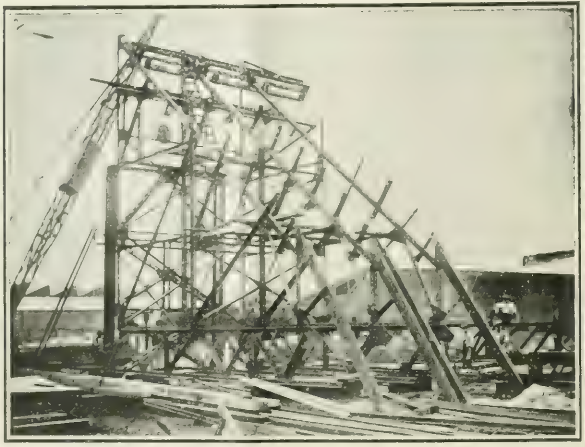
Large Stocks of Steel Joists, Angles, Channels, Bars, Plates, etc.

Agents for the HARVEY ENGINEERING CO., LTD., Glasgow.

GILBERT HAMER & CO.,
LIMITED.

Head Office and Works: CONGELLA WHARF, DURBAN.
Box No. 301. Telegrams: "Girders."
Telephone No. 872.

Johannesburg Office: ROYAL CHAMBERS, SIMMONDS STREET.



6½d.; steel plates, 1-16 in. and ⅛ in., 22s. to 23s.; 3-16 in. and upwards, 24s.; spring steel, 7½d. to 8½d. a lb.; bolts and nuts, hexagon, round, ⅜ in., 9d. to 1s.; ½ in., 45s. to 50s. per 100 lb.; ⅝ in. and ¾ in., 43s. to 48s.; hexagon nuts, ⅜ in., 11d.; ½ in., 10d.; ⅝ in. and ¾ in., 9d. lb.; fish plates, bolts and nuts, ⅜ in., 8d. lb.; ½ in., 6d.; ⅝ in., 5½d.; ¾ in., 5d.; dog spikes, 35s. per 100 lb.; rivets, ¼ in., 11d.; ⅜ in., 9d.; ½ in. and ⅝ in., 45s. per 100 lb.; brass rods, round, ⅜ in., 1s. 5d.; ½ in., 1s. 4d.; ⅝ in. and upwards, 1s. 3d.; brass rods, hexagon, 1d. lb. extra; copper rods, round, ⅜ in., 2s. 4d.; ½ in., 2s. 3d.; ⅝ in. and upwards, 2s. 1d. lb.; tool steel, 3s. 6d. to 3s. 9d. lb.; brass sheets, 1s. 11d. to 2s. 1d. per lb.; copper tubes, solid drawn, ¼ in., 3s. 9d. per lb.; ⅜ in., 2s. 11d. per lb.; 7-16 in., ½ in. and 9-16 in., 2s. 9d. per lb.; ¾ to 1⅛ in., 2s. 6d. per lb.; 1½ in. to 2 in., 2s. 3d. per lb.; 2½ in. to 3 in., 2s. 6d. per lb.; 3½ in. to 4½ in.; 2s. 8d. per lb.; copper rods, ⅜ in., 2s. 5d. per lb.; ½ in., 2s. 4d. per lb.; ⅝ in. to 2½ in., 2s. 2d. per lb.; copper sheets, 2s. 2d. to 2s. 3d. per lb.; fire box copper, 2s. 5d. per lb.; phosphor tin, 3s. 3d.; ingot tin, 2s. 2d.; ingot lead, £28 per ton; drill steel, 6½d.; hollow, 9¾d.; 1¼ in., 9d. to 10½d.; wire nails, 30s. to 35s.; shovels, 52s. 6d. to 57s. 6d.; wheelbarrows, 47s. 6d.; picks, 37s. 6d. to 67s. 6d.; pick handles, 21s.; hammer handles, 14 in., 7s. 6d.; 18 in., 9s. 6d.; 24 in., 13s. 6d.; 30 in., 18s. 6d.; 36 in., 35s.; barbed wire, "Shorthorn," 69 lb., 13½ gauge, 22s. per coil; plain galvanised fencing wires, No. 8 gauge, 100 lb. coils, 27s. per coil; No. 10 gauge, 100 lb. coils, 29s. per coil; No. 12 gauge, 100 lb. coils, 32s. per coil; bulb tee fencing standards, 14 lb., 27s. per dozen; 12 lb., 25s per dozen; black baling wire, 14 gauge, 19s. per coil, 100 lb.; 12 gauge barbed wire, 22s. per coil, 96 lb.; plain wire, No. 8 galvanised, 21s. per coil, 100 lb.; fencing standards, 12 lb., 20s. per dozen; screening, 3s. to 9s. 6d. per sq. yd.; cyanide, 1s. 7½d.; zinc shavings, 1s. per lb.

United States Steel Corporation.

The financial statement of the United States Steel Corporation for the final quarter of 1921 showed that the corporation failed to earn more than about one-sixth of the amount required to pay the common dividend for that period. The total earnings of $19,612,033 against $18,918,058 in the previous quarter, and net income of $11,322,012 was further reduced to $7,377,801 after deducting interest charges on bonds and adjustments of various accounts. To meet the $12,658,702 required to pay dividends on the preferred and common shares. The directors drew from the undivided surplus the sum of $5,280,901. On the figures issued only 21 cents was earned of the $1.25 to be paid to common shareholders for the last quarter. Total earnings for the year amounted to $92,708,829, against $176,686,898 in 1920. The statement, as a whole, reflects the sharp decline of production in the steel and iron industry in the United States during the last two months of 1921

Loss to Australian Industry by High Wages.

Australia has agreed to allow six German experts to work the briquetting machinery at the Morwell coal mines (Victoria) because suitable experts are unprocurable from Britain or America.

Particulars are now to hand of the two contracts placed in Britain in connection with the Morwell power station, which it is claimed could have been executed in the Commonwealth. The Victoria Electricity Commissioners accepted the tender of Redpath, Brown & Co., Ltd., Glasgow, for structural steel work, etc., including erection. The tender price was £114,755. The contract for the complete steam raising plant of the Morwell power house was placed with John W. Thompson, of Wolverhampton, the tender price being £282,318, of which latter tender it has been arranged that £137,110 shall be expended in Australia, Messrs. John Thompson having undertaken either to establish works in the Commonwealth for that purpose or to place work to that value in the hands of Australian manufacturers. Many Australian engineers competed for both contracts, but the prices of the lowest local tenderers very greatly exceeded those of the successful British tenderers. In the case of the steam raising plant the difference amounted to not less than £50,000, after making full allowance for freight, insurance and Customs duties. The explanation for the large difference between the local and British tenderers is largely a matter of wages, as the following comparison of wages in the two countries on January 1, 1922, will show: Fitters in the United Kingdom, £3 13s. 6d. for a 47-hour week, as against £6 2s. 10d. for a 44-hour week in Victoria. Labourers' wages in the United Kingdom, £2 16s. 10d. for a 47-hour week, as against £4 6s. in Victoria for a 44-hour week.

British Engineering Dispute.

This lock-out, which occurred on Saturday last, is limited to the Amalgamated Engineering Union, which numbers 300,000 members. Delegates of other engineering unions, representing 500,000 semi-skilled and unskilled workers, accepted the employers' offer of a fortnight in which to complete a ballot on the question of shop management. The employers have intimated that the fundamental principle of the right of employers to exercise managerial functions must be accepted by the unions before the lock-out notices could be suspended. Previous to the lock-out the Engineering Union Executive put forward a proposal that in the event of overtime being called for the management must discuss with the unions whether it is necessary, which proposal the employers rejected and lock-out notices were issued. The matter at issue is the right of employers to manage their own business, although overtime is the ground the workers have chosen for the battle. The workers insist that overtime cannot be permitted while there is so much unemployment. Latest advices show that the members of the Amalgamated Engineering Union of Belfast have unanimously decided to strike in support of the British engineers. Twenty-five shops and 2,000 men are affected. The gravest apprehensions are felt as to the results of the conflict on industry and trade generally

Second-hand Machinery.

There is, of course, no business doing now although there are inquiries about for several kinds of machinery, particularly small batteries. There is a tendency for those who have a little money to go in for small mining ventures. There are several small propositions now being opened out along the reefs, such as crushing some of the old dumps, and new reefs opening up on the south, particularly out west. This will tend to improve things in the second-hand market, although there is still a quantity of second-hand material to be obtained, and with the advent of quantities of German goods landing and those that have been landed, such as rails, material is not too dear just now, as many of these lines are being landed and sold here almost as cheaply as second-hand goods now in the country. It is to be hoped that the strike will settle things, and that those investors who have held back in the past through all this

MINES DEPT. EXAMS.
CERTIFICATES AWARDED INSTITUTE.

MANAGERS' EXAMS., September, 1921, January, 1922.

We obtained 15 out of a total 22 certificates awarded in South Africa

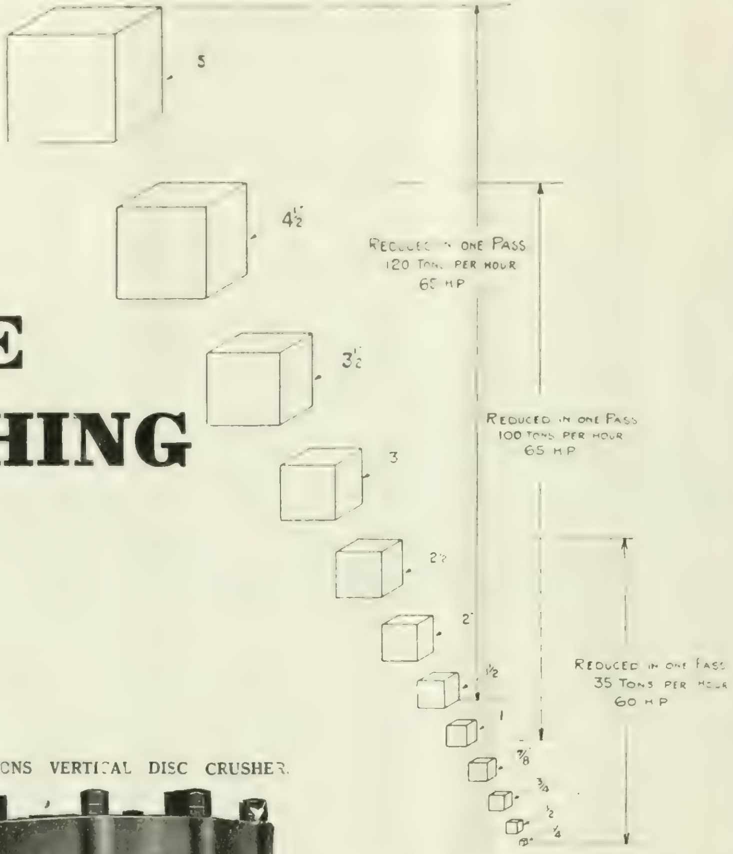
	Metal	Coal	Totals
Ours	9	6	15
Rest of S A	4	3	7
		Total for S.A.	22

OVERSEERS' CERTIFICATES (Metal).
So far as we know we have only had 6 failures during 1921, and secured two-thirds of the certificates issued in S.A. during the past two years.

TUITION (Metal or Coal) by class, correspondence or privately

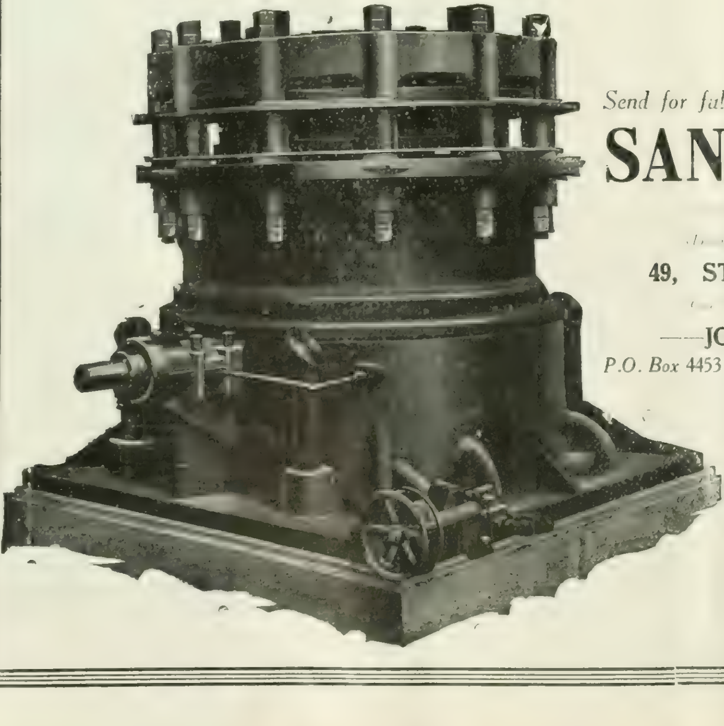
Mining Institute (Prof. Yates),
St. James' Mansions, Eloff St. Johannesburg

CAPACITY OF SYMONS DISC CRUSHER.



STAGE CRUSHING

THE 48in. SYMONS VERTICAL DISC CRUSHER.



Send for full particulars to—

SANDYCROFT
LIMITED.
Incorporated in Great Britain.
49, STELLA BUILDINGS,
Cor. Rissik and New Streets.
——JOHANNESBURG.——
P.O. Box 4453. Telegrams: "SANCROFT."
Phone 2794.

Deister Concentrating Tables.

uncertainty of revolution which has been hatching for months and months will soon resume speculation in industrial as well as mining ventures.

Transvaal Coal Export.

The strike here is naturally affecting very considerably the export of Transvaal coal at Lourenço Marques. Although the supply since the strike is much greater than before it, yet the trade in export has fallen. As a matter of fact, for the past week or so there has been none, as no ships have called there either for bunkers or export. This is undoubtedly due to the fact that as soon as the news of the strike reached London no further contracts for coal were entered into—for the time being at any rate—to load at the port of Lourenço Marques. However, it is stated that towards the end of the present month it is expected that there will be plenty of ships calling for Transvaal coal, London contractors probably having been reassured in the meantime of a continuous supply from Delagoa Bay.

Copper.

It is reported from Elisabethville that the Union Minière has reduced its white staff by one-fifth owing to conditions on the copper market, which will mean a reduction of the Katanga trade of about £4,000 monthly.

A meeting has been held in Port Nolloth for the purpose of petitioning the Government to take over the Cape Copper Company's railway.

Barkly West Commonage Prospecting.

The Barkly West commonage is to be vigorously prospected for gold and precious stones, with, it is said, every prospect of success. Negotiations are now proceeding with an influential syndicate in Capetown to that end.

Oil in Britain.

The Secretary for Mines, the Right Hon. Bridgeman announces that the production of the only British oil-producing well at Hardshott during six months ended December 31 was 78 tons. No oil had been sold since October last, as it was difficult to dispose of small quantities of crude oil. The evidence hitherto had been insufficient to allow of an expression of opinion as to the commercial prospects of oil boring in Britain.

Union's Imports and Exports, 1920-21.

Imports: 1920, £105,927,107; 1921, £58,201,33. Exports: 1920, £83,632,484; 1921, £62,381,209. This shows a drop in trade compared with 1920 of no less than £68,977,045.

Union Railway Development.

Tenders are out for the preliminary tunnel work in connection with the Cedara-Nottingham Road deviation.

German Shipping Activity.

It is stated that the Port of Hamburg, once the third port of the world, has recovered 75 per cent. of its pre-War activity, the bulk of which trade, however, is done by foreign ships. This is a tangible proof that Germany's commercial expansion is progressing apace. The Woermann Line has fixed up a working combine with the German East African, Hamburg-American and Bremen-American Lines. This powerful organisation has a complete African freight and passenger service in operation from Senegal to Lourenço Marques, which will probably be extended in the near future. Although the passenger rates levied by the company are about the same as other lines in the African trade, freights are lower, and a rate-cutting war in African shipping is not unlikely to be seen shortly.

Timber and Building Materials.

There has naturally been no business to record under this head during the past week.

Timber prices.—3 x 9 deals, 1s. to 1s. 1d.; scantlings, 11d.; beaver boards, 4¼d. to 4½d.; floorings, 6¼d. to 6½d.; ceilings, 4½d. to 4¾d.; Oregon, 6s. 6d. to 7s. a cube; pitch pine, 7s. 6d. to 8s.; corrugated iron, 8¼d. Furniture timber: Burmah teak, 17s. 6d. per cube here for first quality, 14s. 6d. for second at the coast; American oak, 1 in., 10½d.; 1½ in., 11d.; 2 in., 11½d., at coast; and Japanese oak, 1 in., 1s. 1d.; 1½ in., 2 in., 1s. 2d., at coast; West African mahogany, 1 in. to 4 in. thick, 26s. 9d. to 27s. 6d. per cube at coast; Rhodesian mahogany, 9s. per cubic foot at mills; Honduras mahogany, 30s. per cubic foot; American yellow pine, 1s. 9d. per foot of 1 x 12 here; American pine shelving, 1s. per ft. 3-ply wood, 3 m.m. up to 5 m.m., alder and birch, 4d. to 6½d. per sq. ft.; oak and teak, 3-ply, 11d. per sq ft. Prices for bricks are about: Mixed, 70s.; wire-cuts, £4 10s. to £5; and £5 for pressed per 1,000, at kilns; white lime, 7s.; unslaked, 10s. 6d. per 180 lb. bag; 8 lb. bag, 1s.; blue lime, 3s. 10d.; blue plaster lime, 4s. 10d.; cement, 11s. 6d. a bag; damp course and roofing, 36s., 54s. to 55s. for 1 to 3 ply.

Metal Market.

Monday's quotations: Standard copper, £60 5s. cash, £61 2s. 6d. forward; electrolytic copper, £67 cash, £68 forward; standard tin, £145 2s. 6d. cash, £147 2s. 6d. forward; foreign lead, £20 15s. cash, £20 12s. 6d. forward; quicksilver, £11; bar gold, 95s.; bar silver, 35¾d. per oz.

A Gold Discovery.

Major E. L. Stratton Collins, of Quaggafontein, via Warmbaths, writes to the *Pretoria News*, that he has just located a gold reef beyond Rooiberg. It is four feet wide, he says, and appears to run about 30 oz. to the ton.

EXPLOSIVES
FUSE
DETONATORS
ACIDS
CHEMICAL PRODUCTS
SHEEP DIP
CATTLE DIP
ETC., ETC.

CAPE EXPLOSIVES WORKS, Ltd.
P.O. DYNAMITE FACTORY,
SOMERSET WEST, C.P.

PROSPECTUS

OF THE

"BILTONG" ASBESTOS CO., LIMITED.

Directors:

JOHN ST. LEGER, Esq. (Chairman)
Dr. A. MARIUS WILSON
A. J. S. LEWIS, Esq.

C. FORREST RIGG, Esq., J.P.
BEN WILSON, Esq.

Auditor:

R. E. McDONALD, Esq., Scottish Chambers, St. George's Street, Cape Town.

Bankers:

STANDARD BANK OF S.A., LTD. | A.B.C. Branch, Adderley Street, Cape Town.

Solicitors:

MESSRS. MICHAU & MULLER, 5, Barrack Street, Cape Town.

Secretaries and Registered Offices:

MESSRS. PARTINGTON & CO., Markham's Buildings, Cape Town.

THE "BILTONG" ASBESTOS COMPANY, LIMITED.

(To be Registered under Companies' Act, 1892, Cape cf Good Hope).

Nominal Capital - - - £75,000.

Divided into 75,000 Shares of £1 each apportioned as follows:—

24,000 Shares of £1 each fully paid up to the Vendors and Promoters as part consideration for the Transfer to the Company of the Asbestos Mining interests and Contracts now in hand.

6,000 Shares Cash to Vendors and Promoters.

45,000 Shares of £1 now offered for Public Subscription.

75,000 Shares.

The Public are, therefore, asked to subscribe £51,000in £1 Shares which are payable as follows:—10/- per Share on Application; 5/- per Share on Allotment, andthe balance of 5/- per Share as and when the Directors shall decide that more Capital is necessary.

OBJECTS.

To take over, ratify and adopt a certain Agreement entered into at Cape Town on the 11th August, 1921, between BENJAMIN WILSON, of Shabani, Rhodesia, as Vendor, of the one part, and JOHN ST. LEGER, of Cape Town, Cape Province, in his capacity as Trustee for and on behalf of a Company to be registered under the Companies Act, 1892, of the Cape of Good Hope, and to be called "THE BILTONG ASBESTOS COMPANY, LIMITED," of the other part.

A copy of the said Agreement may be inspected at the Offices of the Secretaries, Messrs. Partington & Co., Markham's Buildings, Hout Street, Cape Town.

The Company is acquiring from the Vendors the whole of the Vendors' Asbestos Mining Interests in the Vukwe Hills, Shabani District of Southern Rhodesia, which consists of some seven Base Metal Claims of asbestos-bearing ground, together with the contracts for fibre now being delivered.

The Attorneys to the Company have examined the Vendors' titles and give the following certificate:—

Cape Town,
Cape of Good Hope,
2nd November, 1921.

Messrs. Partington & Co.,
Secretaries,
Biltong Asbestos Co.,
Markham's Buildings, Cape Town.

Dear Sirs,

Re **Biltong Asbestos Company.**

We beg to inform you that the Certificates of the Seven Blocks of Asbestos Claims Nos. 726 Pt. V. to 732 Pt. V., situate at Shabani, Rhodesia, and registered in the name of Benjamin Wilson, are in our possession, that they are in order, and can be transferred the moment the above Company is incorporated with limited liability and has adopted the Agreement entered into on the 11th August, 1921, between the Vendor, Promoters and Trustee therein referred to.

Yours faithfully,

(Signed) MICHAU & MULLER.

"BILTONG" ASBESTOS COMPANY, LIMITED.—Prospectus continued.

QUALITY OF ASBESTOS.

The fibre mined is PURE WHITE CHRYSOTILE ASBESTOS, which equals in every way that produced in Canada, the home of the asbestos mining industry. This type of fibre is the best known substance, and is rapidly coming into general use for all electrical and heat insulation, packing material, and for every purpose where a non-conductor of heat is required. The longer fibres are used in the manufacture of fireproof textiles, belting, yarns, tape, etc., while the shorter fibres, with cement, form the component parts of building materials such as roofing sheets, partition boards, tiles, etc., which are fast supplanting the use of corrugated iron and wood throughout the world.

MARKET AND DEMANDS.

Owing to the use of Asbestos becoming more and more general every day, the demand for fibre, especially the better classes of White Chrysotile, is increasing by leaps and bounds.

The following figures, which are the exports from British South Africa for the past few years, show what rapid developments the asbestos mining industry has made.

The exports from:—

In	The Union. Were	Rhodesia.	Value.
1910	1,746 tons	186 tons	£28,093
1911	1,626 ,,	278 ,,	£27,996
1912	1,309 ,,	35 ,,	£19,542
1913	1,135 ,,	248 ,,	£17,641
1914	1,306 ,,	168 ,,	£20,969
1915	3,090 ,,	1,850 ,,	£71,833
1916	4,490 ,,	5,717 ,,	£157,699
1917	6,069 ,,	9,966 ,,	£253,742
1918	3,803 ,,	8,343 ,,	£258,221
1919	5,520 ,,	9,719 ,,	£327,154
1920	8,342 ,,	15,262 ,,	£527,429

There are other mines operating in the district within a radius of 20 miles, which are, and have been for a considerable period, producing fibre of a similar quality to the extent of some 1,000 tons per month. The "Shabani" Mine, 16 miles from the property described herein, produces about 600 tons per month.

The property has been worked by the vendor, who held the contract for the supply of 150 tons of fibre, which was sold at £52 per ton and which was mined by contract at £30 per ton. The Company have, however, decided it will be better to cancel this contract as they have reason to believe the fibre can be sold more profitably. With the introduction of plant this figure of £30 could be greatly reduced and the contractors' profit saved by the company working the mine themselves. Even taking the mining cost at £30 per ton, the sale of fibre shows a very handsome profit of over £16 per ton after deducting cost of transport.

The buyers of this parcel of 150 tons have expressed their willingness to place an order of 1,000 tons at the above figure of £52 10s. 0d. per ton, provided the fibre can be supplied free from foreign substance. This could be done with the introduction of a small plant costing approximately £500, but the Company think it advisable to inaugurate a plant to cost about £2,500 capable of treating up to 700 tons of fibre per month.

Factories for the manufacture of Asbestos goods are going up in all countries, and, as already stated, the demand for fibre will for a considerable period exceed the supply. On an output of 100 tons per month only, taking the price of fibre at considerably under market value, the Company would realise large profits. On what is considered a conservative basis that output would mean a profit of £18,000 per annum.

The following figures illustrate:—

Output per month	100 tons.
Average price per ton obtained for fibre	£37 10s
Cost of production per ton taken liberally at	£22 10s. per ton.
Profit per ton	£15 0s
Profit per month	£1,500
Profit per annum	£18,000

The Asbestos produced is saleable all over the manufacturing world.

There is an ample supply of water on the property and a river passes some three miles to the south. Ample labour supply is obtainable from the surrounding country.

THE INDUSTRY.

A few brief remarks on the possibilities of the asbestos mining industry would no doubt be of interest. The figures shown elsewhere in the prospectus show what rapid growth has taken place.

The following is an extract from a leading English trade journal. The editor writes as follows:—"A friend of mine, who has recently made a leisurely tour of Rhodesia, writes me to the effect that important events may shortly be expected in the local asbestos industry. At Shabani and Mashaba, in particular, he tells me the confidence of the mining companies in their properties is increasing by leaps and bounds and extensive expansion in both mining and milling is now in hand."

The dividends paid by other companies operating in Rhodesia have been for some time past very high, several being between 20 and 30 per cent. A South African mining journal of high standing describes the Asbestos industry as rapidly growing in importance in both Rhodesia and the Union.

The company offers an excellent opportunity for investors to obtain an interest in this rapidly-extending industry, which is so quickly taking place in the front rank in British South Africa.

THE PROPERTY.

The claims have been pronounced to be the best in the vicinity and have been thoroughly prospected, and considerable development work has been done. The Company would be able to commence mining operations without any loss of time while the mine was being opened up. All the ground of any consequence round the claims has been secured to the company.

The actual development work done on the property consists of five adits of varying lengths and on different levels. All the adits show fibre in considerable quantities, well worth mining.

The property mainly consists of two hills, which are both of asbestos-bearing rock. The mining conditions are ideal, a track run up the gully which separates the two Hills would tap both, and enable the waste to be dumped out on to the flat, by which asbestos-bearing ground would not be covered.

A winze has been put down some 50 feet in the gully and shows considerable occurrences of fibre right to the bottom.

The property is at present some 65 miles from the railroad, but a railroad to Shabani has been sanctioned, and when completed the property will then only be some 16 miles distant. Transport is easily arranged either by the Company themselves or let out on contract. The matter offers no difficulties.

Except to state that the property is ready for extensive mining operations it is not necessary for further remarks. The fact that fibre from the mine has already been sold is sufficient guarantee that the fibre produced at this property is marketable and of high value.

REPORT BY ENGINEER.

The report on the properties by W. J. Grant, A.I.M. & M., can be seen at the office of the Secretaries. It is too lengthy to publish in full, but the following conclusions are given for general information:

"From the foregoing it will be gathered that the BILTONG MINE is a most alluring proposition, and one which may, and probably will, develop into an enormous concern.

"The holding comprises of eight blocks of claims, each equivalent to an area of 2,700,000 square feet.

"It will readily be seen, therefore, that as far as prospecting and development are concerned, this huge area has, comparatively speaking, not been 'scratched.'

"There are no reasons why, judging by the surface indications, most of the ground held should not prove to be payable, much of it outside the very limited section so far exploited has been proved fibre bearing, but

"BILTONG" ASBESTOS COMPANY, LIMITED. Prospectus continued.

[illegible]

I have [illegible] of work carried out. Figures can only be proved by work, though I have **every confidence** that my estimate [illegible] I [illegible] cent. which, on the present showing is a very **low** [illegible] grade, it is a proposition of enormous possibilities, and I have **no** hesitation whatever in making the recommendations I have done.

"If the mine is judiciously handled it should after the preliminary capital outlay yield an ever increasing profit, portions of which can be set aside for further development until such time as the mine proves to be [illegible] developing into."

The [illegible] following purposes:—

3,375 Shares for expenses of flotation, etc.
30,000 Shares for Vendors' interests.
[illegible] Shares for Working Capital.

Applications for shares will be dealt with strictly according to priority of receipt, and the Board of Directors does not undertake to allot the number applied for or in fact any number.

Every applicant will subscribe subject to the condition that if allotted a less number than those applied for, he will accept same.

The Directors reserve to themselves the right to close the subscription list whenever they deem it fit, and to go to allotment when 7,500 shares are applied for.

All shares rank equally in every respect. There are no preference shares nor debentures.

An Application Form is attached hereto and applications will be received from this date onwards.

Markham's Buildings,
Cape Town, August 18th, 1921.

The
"Biltong" Asbestos Company,
Limited.

REGISTERED CAPITAL £75,000
(Divided into Shares of One Pound each).

APPLICATION FOR SHARES.

I (Name in full) ..

of (Address in full)

do hereby apply for Shares of £1 each of the above-named Company in terms of its Prospectus, dated 18th August, 1921. I agree to accept allotment of that or any less number of Shares that may be allotted to me. Herewith payment £ : : , being 10/- per share, payable with this application. If less than those applied for hereby allotted to me, a rateable return must, forthwith, be made to me.

Date.

Usual Signature

To MESSRS. PARTINGTON & CO.,
Secretaries,
The Biltong Asbestos Co., Ltd.,
P.O. Box 1708, Cape Town.

Please cross all cheques, money orders, postal orders: **Standard Bank of S.A., Ltd. (A.B.C. Branch), Adderley Street, C.T.**

CENTRAL MINING/RAND MINES GROUP.

[illegible] General Meetings of the undermentioned Companies will be held in the Board Room, [illegible] Floor, The Corner House, Johannesburg, as follows:

Name of Company.	Date of Meeting.	Time.	Share Transfer Books will be closed from
[illegible]	Friday, 5th May, 1922	11 a.m.	29th April, 1922, to the 5th May, 1922.
[illegible]	Thursday, 18th May, 1922 ..	11 a.m.	12th May, 1922, to the 18th May, 1922.
[illegible]	Thursday, 18th May, 1922 ..	12 noon.	12th May, 1922, to the 18th May, 1922.
Rose Deep, Limited	Tuesday, 23rd May, 1922 ..	11 a.m.	17th May, 1922, to the 23rd May, 1922.
[illegible]	Tuesday, 23rd May, 1922 ..	12 noon.	17th May, 1922, to the 23rd May, 1922.
Geldenhuis Deep, Limited	Tuesday, 23rd May, 1922 ..	2.30 p.m.	17th May, 1922, to the 23rd May, 1922.
City Deep, Limited	Friday, 26th May, 1922	11 a.m.	20th May, 1922, to the 26th May, 1922.
[illegible]	Friday, 26th May, 1922	12 noon.	20th May, 1922, to the 26th May, 1922.
Knight Central, Limited ..	Friday, 26th May, 1922	2.30 p.m.	20th May, 1922, to the 26th May, 1922.
Crown Mines, Limited	Thursday, 1st June, 1922 ..	11 a.m.	26th May, 1922, to the 1st June, 1922.
Durban Roodepoort Deep, Limited	Thursday, 1st June, 1922 ..	2.30 p.m..	26th May, 1922, to the 1st June, 1922.
Rand Mines, Limited	Friday, 2nd June, 1922 ..	11 a.m.	27th May, 1922, to the 2nd June, 1922.

By Order of the Boards,
RAND MINES, LIMITED,
Secretaries.
S. C. STEIL,
Secretary.

Head Office:
The Corner House,
Johannesburg.
15th March, 1922.

Revolution and Unemployment—The Reef getting into its stride again—Our Diamond Industry.

The South African
Mining & Engineering Journal
THE ONLY WEEKLY MINING PAPER IN THE CONTINENT OF AFRICA.
Established 1891.

Vol. XXXII., Part II   JOHANNESBURG, TRANSVAAL, SATURDAY, MARCH 25, 1922.   No. 1591

The New President of the Mine Managers' Association.

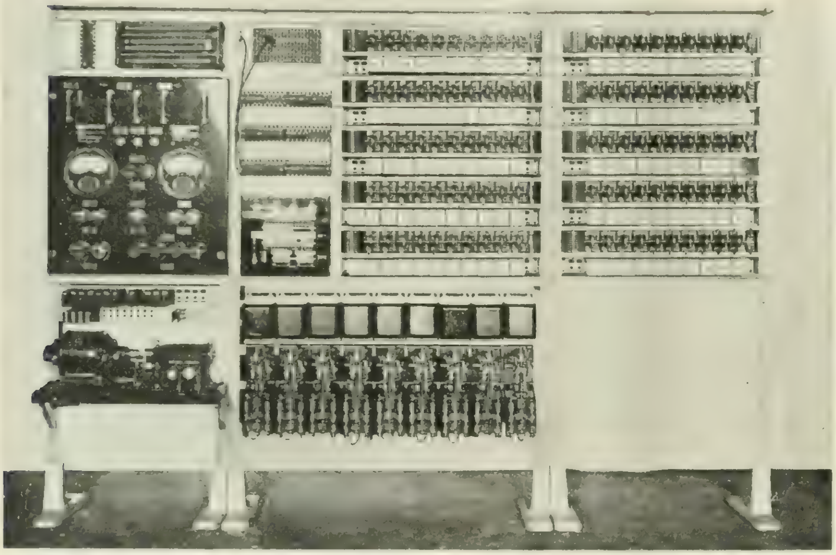
Mr. E. C. J. Meyer, Manager, East Rand Proprietary Mines.
Mr. Meyer enters upon his term of office during a most momentous period in our industrial history, and the Journal wishes him and his brother managers all success in the work of rejuvenating the Rand and in bringing industrial peace and prosperity into our midst again.

SIEMENS BROTHERS

AUTOMATIC TELEPHONES

In addition to a number of
PUBLIC EXCHANGES FOR LARGE TOWNS
we have supplied scores of
PRIVATE AUTOMATIC EXCHANGES

Our EXPERIENCE is wide—Our SATISFIED CUSTOMERS numerous



PRIVATE AUTOMATIC EXCHANGE BOARD 100 Working Lines

CHEAP TO MAINTAIN—SIMPLE TO WORK

IMMEDIATE DELIVERY FROM LOCAL STOCK

Representatives in South Africa:

A. J. G SIMPSON, A.M.I.E.E.
African Life Buildings, 85, St. George's St.,
CAPE TOWN.
P.O. Box 239 Cape Town. Telephone 1202 Central.

G. H. B. BERNARD, A.M.I.E.E.
9-10, Cotts Buildings, Rissik and Fox Sts.
JOHANNESBURG.
P.O. Box 7404 JOHANNESBURG. Telephone 408 Central.

Telegrams: "SIEMENS"

Rejuvenation of the Rand.

OUTLOOK FOR REASONABLE COSTS—POSITION AT VARIOUS MINES.

It is as yet too early to take stock of the position on the Rand, to see how the industry has weathered the storm of a two months' strike and a week of revolution and to attempt a forecast as to the future. The outstanding fact is that the mines have suffered no material damage worth speaking of. Their plants are intact. The ore reserves and working faces and main hauling ways are untouched, and as a matter of fact the tonnage of payable ore has been enormously increased without a single blast of rock because of the much improved outlook for a reduction in working costs and freedom from Federation tyranny.

The Chamber's Splendid Donation.

The Chamber of Mines has intimated its readiness to recognise bona fide trades unions, and the gold section of the Chamber has donated the magnificent sum of £20,000 towards the relief of distress.

Re-engagement of Men.

The mines are now re-engaging as many men as they can, having regard to the much reduced native labour force, and it is only right and fair and natural that in restarting the industry the mining companies are giving preference to the best men and particularly to those who have stood by the industry in its weeks of trial, and especially to those who responded to the country's call in the hour of South Africa's need.

Getting Straight Again.

Obviously it will take some little time for things to shake down and for all the threads, tangled by the momentous events which have taken place since the beginning of the year, to be straightened out. Large numbers of the best mine boys have been repatriated. At some mines there is a superfluity of hammer boys and not enough labour in the lashing gangs, and at other mines the position is quite the reverse. But all these matters will gradually and surely be adjusted. We believe that a complete rejuvenation of the Rand will be accomplished quicker than most people expect. What the Government enquiry may bring forth, what recommendations may be acted upon, whether the mines will be subjected to a special strike levy or not, are matters which may best be left to the decision of time. At this juncture all we can say is that it does appear probable that the Rand will get back to a regime of reasonable working costs and of reasonable working efficiency before very long. Working expenses will be reduced in several directions and managers will be able to devote more of their time to the real business of gold winning than they have been able to do during the past few years. The new President of the Mine Managers' Asociation is Mr. E. C. J. Meyer, manager of the East Rand Proprietary Mines. Mr. Meyer's photo appears as the frontispiece of this week's issue, and we take the opportunity of wishing him a successful year of office.

Just before going to press we instituted enquiries as to the position obtaining at various properties. The situation is steadily improving, and what is written to-day may require large revision to-morrow. The following brief remarks gained from directors and consulting engineers in the rush and turmoil of the week may, however, serve to indicate how the principal industry of South Africa is regaining its feet.

Corner House Group.

New Modder.—One mill running. Position steadily improving.

The stacks are smoking again: A scene on the Rand.

Modder B.—Crushing proceeding satisfactorily.

Modder East.—Ore being railed to Apex mill again. One shaft still under water.

Crown Mines.—Getting back to normal. Outlook for this company considered to be much improved on account of large tonnages of low grade ore, which should become payable.

E.R.P.M.—Crushing 2,000 tons per day. Reorganising native gangs.

C.M.S. Group.

Brakpan Mines. Hoisting 1,000 tons per day. About 40 stamps at work.

Springs Mines.—40 stamps running.

West Springs.—Mine will be clear of water in a week.

Union Corporation Group.

Modder Deep.—With restricted white and black labour complements, the mill is running to its full capacity. No development is being done at present, but when the labour force is adequate this will soon be made up.

Geduld.—As at [illegible] this mine is crushing to its full capacity, but development has not yet been restarted. The process of filling up the white and black labour complements is being gradually effected.

General Mining Group.

At the Aurora West and New Goch the mills are running full time and work is progressing at a satisfactory rate. At the Meyer and Charlton two shifts are working 75 stamps, and by the time this appears in print three shifts will be at work. At the West Rand Consolidated three shifts are running 75 stamps and the underground labour force is fully employed breaking rock. At the Van Ryn Estate one mill is running full time. At all the mines of the group the lack of the full complement of native labour and the necessity for awaiting the return of men on active service with the different units is delaying resumption of operations on the maximum scale.

The boys who came from Durban to help the Rand: Some of the D.L.I.

Gold Fields Group.

Sub Nigel.—The full mill is working and normal operations are proceeding. Owing to its isolated position this mine suffered less from the attention of the strikers than others.

Simmer and Jack.—Two-thirds of the mill is running on this mine and men are being signed on gradually.

Robinson Deep.—At this mine, which was very thoroughly defended during the trouble of last week, the mill is being worked to two-thirds of its capacity.

Barnato Group.

State Mines.—At the State Mines the reduction works are running to half their total capacity.

Randfontein Central.—At this mine the large mill is running to one-sixth of its total capacity.

Consolidated Langlaagte.—At this mine the reduction works is running to half its capacity.

Langlaagte Estate.—The mill is running to half its total capacity.

Van Ryn Deep.—The reduction works are employed to the extent of half their total capacity.

New Unified.—The mill at the New Unified is running to three-quarters of its full capacity.

Witwatersrand.—Three-quarters of the reduction works are in operation at this mine.

New Primrose.—The mill is working to one-third of its capacity.

New States.—Dewatering is proceeding at this mine, preparatory to the resumption of development work.

General.—At all the mines of the Barnato Group it is expected that by the beginning of next week it will be possible to extend considerably the scope of operations. Shortage of native labour materially delays the resumption of operations on a pre-strike scale.

At practically all properties development operations have not been resumed up to the moment of writing.

Rhodesia's Mines Output in 1921.

Southern Rhodesia produced 585,524 oz. of gold in 1921, valued at £3,217,275, an increase in value of £160,726 on 1920. The annual report of the Rhodesian Chamber of Mines gives the following details of the mineral output for the year:—Silver, 152,988.80 fine oz., £19,841; copper, 3,079.94 tons, £201,341; coal (raised), 574,753 tons (value coal and coke), £256,815; chrome ore, 50,187.72 tons, £195,360; asbestos, 19,528.71 tons, £795,699; arsenic, 361.27 tons, £11,263; mica, 85 tons 451 lb., £20,747; tin, 5.01 tons, £513; tungsten ores, 17 tons 496 lb., £800; diamonds, 141 carats, £721. Total, £1,503,100. The grand total value of the mineral production for the year 1921 was £4,720,375, as compared with £4,450,987 for the year 1920, being an increase of £269,388. This increase is made up as follows:—Increase in value over gold over 1920, £160,726; increase in value of other metals and minerals over 1920, £108,662. Total, £269,388.

Native Mine Labour in Rhodesia.

According to the annual report of the Rhodesian Chamber of Mines, a Conference was held in Salisbury on the 23rd February, 1921, for the purpose of discussing a proposal to reorganise the R.N.L. Bureau and to distribute the cost of labourers more evenly amongst employers. The result of the Conference was that farming and general members of the Bureau agreed to pay increased capitation fees of 10s. per native, and the Railways agreed to pay an increase of 15s. per native, for the purpose of making a refund to miners of a portion of the amount paid by the latter under the Labour Fees Ordinance. The Government was asked to appoint a Commission of Enquiry into the supply of native labour with special attention to the alien native. In March, 1921, as an outcome of the above R.N.L.B. Conference, the Government appointed a Committee of Enquiry into the Native Labour supply, with the object of making recommendations regarding the best method of maintaining and increasing the supply, with special reference to the entrance into Southern Rhodesia of natives from adjoining territories. The Committee issued its report on 22nd April, 1921, having gone very fully into the subject, and the conclusions arrived at should be of great value to the mining and other industries.

Rhodesia and the Gold Premium.

The following is a complete list of gold premiums distributed to 31st December, 1921:—July 25th to December 31st, 1919, 17s. per fine ounce; January 1st to March 31st, 1920, £1 9s. 8½d. per fine ounce; April 1st to June 30th, 1920, £1 0s. 9d. per fine ounce; July 1st to September 30th, 1920, £1 7s. 1d. per fine ounce; October 1st to December 31st, 1920, £1 13s. 5¾d. per fine ounce; January 1st to March 31st, 1921, £1 2s. 5d. per fine ounce; April 1st to June 30th, 1921, £1 0s. 11d. per fine ounce; July 1st to September 30th, 1921, £1 7s. 3¾d. per fine ounce; October 1st to December 31st, 1921, 18s. 4d. per fine ounce.

The Diamond Industry.

SOME VALUABLE STATISTICS—IS THE WORST OVER?—A THOUGHTFUL ANALYSIS OF PROSPECTS.

What are the prospects of a fairly early revival in the South African diamond market? It is very difficult to answer this question with any degree of confidence. The diamond market is essentially fickle and cantankerous. But rumours reach us from influential quarters which are encouraging. It is freely stated that before long there will be sensational developments in this branch of the South African mineral industry, that there is likely to be some epoch-making readjustment of control, and that in the near future diamonds will come into their own again. Much of this is, of course, purely speculative. But in the following abstract from a highly important article on the subject of the Union's diamond industry, prepared by a competent authority, we give some hard facts and figures which are of the greatest value in an endeavour to appraise the present position and future prospects of this industry at their true worth.

The South African diamond mining industry was undergoing severe depression during the entire year 1921. Outside of 1915, when the mines were practically closed as a result of the economic disturbances caused by the world War, one has to go back to 1885 in order to find a smaller value than that recorded for 1921, while the volume is the lowest since 1883, the date from which statistics are available. The value of the 1921 output was £3,103,448, while by volume it was 806,643·33 carats. As the 1920 value was £14,762,899, the decrease was £11,659,451, or 79 per cent. The drop in volume was 1,738,375·67 carats, or 69 per cent. below the 1920 figure.

Causes of Depression.

Several factors have contributed to create the depression. In the first place, diamonds are largely luxuries, and the consumption or demand was immediately and radically reduced by the world-wide deflation process that commenced during the middle of 1920. Then, there was a large volume of diamonds thrown on the world market from Russian sources at almost any price they would bring, which had a depressing effect upon prices which were already weakening. The third important factor was that large numbers of people were forced to sell stones in order to secure cash or liquid assets. A fourth factor was the unloading of diamonds from the Belgian Congo, outside the Diamond Syndicate, and perhaps a fifth was the much increased output from the alluvial diggings.

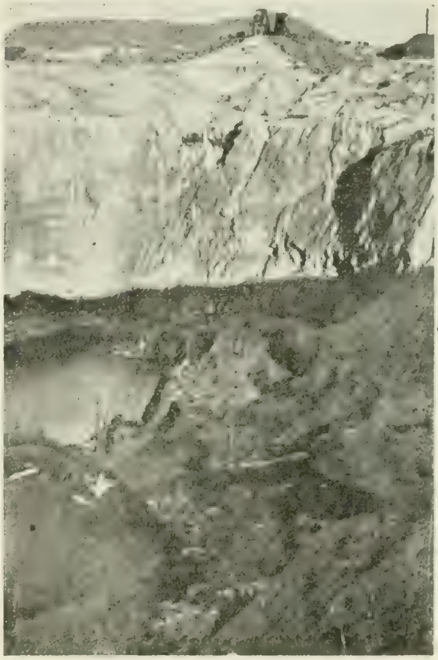
The sales of diamonds, as reported by the Department of Mines and Industries, likewise show a big decrease. Sales in 1920 totalled 1,765,993·82 carats, of a value of £10,328,401, as compared with 530,106·69 carats in 1921, the sum realised being £2,161,796, a drop of over £8,000,000. The value per carat as reflected in sales was 81s. 7d. per carat against 117s. in the previous year and 101s. in 1919. The drop in value in the past year was therefore almost 33 per cent. It is apparent that the estimated value of the 1921 output is under the sales price by about 4s. 7d. a carat.

Another indication of the depression is found in the Customs statistics for the year 1921, which show that 316,702 carats were exported to a total value of £1,355,487, as compared with 2,039,554 carats, worth £11,597,451 in 1920.

As was reported last year, during the five-year period, 1916-1920, the production of diamonus exceeded the total sales by 1,254,328·48 carats. The excess of output over sales in 1921 was 276,536·64 carats, which would indicate that the Diamond Syndicate still held of the last six years' production slightly over a million and a half carats, without taking into consideration any stocks on hand at the commencement of the period.

The Selling Syndicate.

The policy of the Diamond Syndicate has often been the subject of controversy. It may be helpful to explain briefly their policy. While it is admitted that the controlling interests in the Syndicate must be thoroughly convinced of the value and wisdom of their policy, by reason of its continued enforcement, and that the Syndicate is naturally the best judge of the benefits derived therefrom, the recent period of depression has called forth strong criticism from various sources. The cost of holding up the price of diamonds artificially, through restriction and control of production and distribution, is tremendous and is, in any event, a serious offset to the very apparent advantages. The very widespread retrenchment of workers that has prevailed at Kimberley and other centres during the past year has been regarded among labour circles as an indictment of the Syndicate, on the grounds that the control policy has not been able to prevent disastrous



A South African Diamond Mine.

The accompanying important article examines in detail the achievements and prospects of the country's diamond industry.

unemployment. In other words, the benefits are solely for the owners and shareholders. It is realised that this viewpoint is a very narrow one, and hardly in accord with the facts. Yet it is interesting to note that there is a tendency to query the control policy of the Syndicate from several angles. Sir David Harris stated, in reply to such criticism, at the annual meeting of the De Beers Company, that "had it not been for the policy of control instituted by this Company many years ago, and followed by all big producers, during the present world-wide depression, the results to the diamond industry would have been disastrous. This policy (of control) will be maintained and adhered to."

Some Interesting Figures.

Normally the Cape Province is the most important producing section of the Union, but in 1921 the Transvaal production was the largest in volume. Out of a total of 424,486·55 carats, worth £1,254,151, 358,505·05 carats of a value of £852,949 came from the Pretoria district, which means practically the Premier Mine. Of this output, sales realised £[illegible] for [illegible] carats or an average of 75s. 7d. per carat. On the other hand, in the Cape Province, sales were in excess of production, being by volume 254,472 against 238,470 carats, yet the value of the 1921 output was £1,305,221 compared with the sales value of £1,198,087, the value realised by sale being on an average 94s. 2d. per carat. Kimberley furnished by volume 179,752·25 of the production, and Barkley West 53,725·25 carats. In the Orange Free State, the output was 143,686·78 carats against sales of 92,160·66. The value of the former is given as £544,076, of the latter £270,535, or an average of 58s. 9d. a carat, which is much lower than the figure for either of the other two Provinces.

It is to be noted that the depression has been the worst in the Cape, where the great mines are, yet in the Transvaal the Premier Mine has continued operations, on a smaller scale, throughout the year. The different methods of mining are believed to be responsible. At the Premier Mine, diamonds are quarried rather than mined, and expensive white labour is not so necessary as at Kimberley where stones are mined at fairly deep depths. The output has been curtailed the least in the Orange Free State, as there diamonds are secured largely from the alluvial diggings by individual prospectors.

Dividing the output according to the nature of recovery, it is found that the mines, of which there were 28 worked either during the entire year or for periods ranging as low as one month, produced 653,241·42 carats, worth £2,200,522, while 147,637·16 carats, value at £894,690 were found by alluvial diggers, and the rewashing of debris resulted in securing 5,765·75 carats, of a value of £8,236. The wages paid out in 1921 were far below the 1920 figure of £2,852,701, or the pre-War 1913 total of £3,031,790, being only £1,365,843. Of this amount £935,604 was disbursed to whites, who also received £103,043 in "retrenchment bonuses," £313,231 to natives, £13,933 to other coloured peoples, and £32 to Asiatics. While figures are not available for the number of employees, it is known that the total was far below the 1920 figure of nearly 57,000. Ever since early in the year unemployment at Kimberley and other centres has been severe. One favourable result has been an endeavour at Kimberley to broaden their industrial development in order to make the locality less dependent upon the diamond mines. This is naturally a matter of years, but some progress has already been made. The 1921 stores consumption figures are likewise not yet available, but they will be considerably below the 1920 figure of £1,483,284, due to lower price levels and the restriction of operations.

The prospects for 1922, both with regard to the world demand and production, have an important bearing on the general prospects of South Africa. The depressing factors that were active during 1921 are expected to be either absent during the present year or diminished in their influence. The world-wide deflation process has been checked and the general trend of conditions in the principal countries, which absorb the bulk of the South African output, will probably be upward.

It is apparent that in the opinion of Sir David Harris the new Russian "mine" has been about worked out, and that such competition in the future is about at an end. The liquidation of stones by private holders has also been completed, so that competition from the Belgian Congo alone remains as an unfavourable factor. Judging by past experience, the Syndicate will be able to avoid a price-cutting war, which could not be to the financial advantage of either party. It would seem, then, that the prospects for sales are decidedly better for 1922 compared with 1921. It is questionable, however, whether there will be a decided increase in production, at least as far as the mines are concerned. Having incurred heavy losses in 1921, and holding large stocks of stones, it is unlikely that there will be a resumption of operations on any large scale before the latter part of 1922. Even this would necessitate a greater increase in the demand and realisation price for diamonds than can be confidently expected. On the whole, the improvement in demand may be expected to be comparatively slow and gradual, which will be reflected even more slowly and gradually in the resumption of production. Certainly normal conditions cannot be expected either for sales or production, but the expectation of a small or fair improvement over 1921 conditions seems reasonable.

The Part of the Gem Industry.

Reference should be made to the important part which the diamond mining industry has played in the economic development of South Africa. While their influence has not been so great as that of the gold mines, yet their past has not been an unimportant one. The discovery of diamonds in South Africa led almost immediately to a large influx of population and of capital. Besides furnishing new avenues of employment to thousands, the diamond mines have had a widespread influence upon the development of agriculture and the building up of local industries. From indications of recent years, it is probable that the industry has reached or passed its development stage, and that under the policy of internal control of production and distribution it will have a stable existence, excepting, of course, in periods of great prosperity and depression. The tendency will be for a greater share of profits of the future to be re-invested in domestic enterprises, either allied to diamond mining or those that appear to offer exceptional opportunities. The argument that the diamond mines are of little economic value to South Africa is thoroughly unsound. In addition to the large wage payments, an increasing percentage of the expenditures on stores and materials used in the mines goes to local manufacturers and producers, and thus aid in the industrial growth of the country. Further, the capital invested is tending more and more to be centred in South Africa, with a result that dividends stay in the Union, this adding to its purchasing and investment powers, instead of being sent out of the country, as was so largely the case in former days.

The Outlook.

The future of the industry seems assured. As a result of the transfer of German South-West Africa to the Union, the most formidable competition has been absorbed in the Syndicate, and an agreement has been recently reached whereby each of the four chief producers—De Beers, South-West Africa, the Premier, and Jagersfontein—will supply only an agreed quota, which will add to the strength and stability of the diamond market. Up to 1913 South-West Africa had produced stones to a value of over £7,000,000, and in that year alone the output was estimated at nearly £3,000,000. While the 1921 production statistics for the Protectorate are not yet available, exports for the year are officially recorded as 167,732 carats of a total value of £810,739, which is to be compared with the 1920 figures of 606,422 carats and a value of £4,265,294. The stones are, however, very small as a rule, although of good quality, and only compete with Union goods in certain classes. Brazil and the Belgian Congo are the only other producers of which serious account need be taken. The Congo stones are said to be very high in quality, but of smaller average size than those from the Protectorate, which limits their market and competition. Brazilian competition is not regarded as being of a serious character. At least that was the judgment of a well-known South African expert who went to Brazil and made a special study of that field.

The position may therefore be summed up as follows: The diamond mining industry of South Africa is emerging from the severe depression that commenced in 1920 that, from the standpoint of internal control, the industry is in an even stronger position than before the War. The immense strength and resources of the combinations holding the control are a sufficient guarantee that there is little danger of over-production or price warfare. South Africa is thus in the position of having almost an absolute world monopoly, which is so organised as to ensure the most profitable results. The view that the "saturation point" has been reached, and that the demand for diamonds is passing because the wearing of jewellery, which is described as a relic of a barbaric custom, will soon be abandoned by women, is not given serious consideration, nor is it widely held by expert observers. The truth is that the luxury demand, as compared with the smaller industrial demand, has no "saturation point" as long as human nature remains what it is.

The Strike and the Revolution.

A THOUGHTFUL ANALYSIS—SOME OUTSTANDING FACTS AND DEDUCTIONS.

The following extract from a letter to an engineering student oversea from his father, formerly a member of the staff of this paper, who has been directly in touch with Transvaal mining since 1882, has been handed to us for publication:—

Summarising very briefly the whole matter, it is essential first to realise that there are at least three salient aspects of such problems as we are faced with in this country outside of the economic and industrial (the first, in my mind, connoting the purely financial and commercial side, and the second the relation between employers and those in their pay, together with the relation of the workers originally affected—colliery and gold, mine workers, with other wage-earners along the line of trades unionism). These three aspects are (a) racial, (b) political, (c) Socialistic, and owing to the facts that the (so-called) European community of this country rests on a "black" foundation in the proportion of one "white" to six coloured, and that the "natives" amongst the coloured comprise the probably most virile black race in the world, the problem facing South African civilisation is unique not only in the world of to-day, but in all history. In this last connection it must never be lost sight of that throughout all human record every effort made by numberless civilised alien races to control, dominate, educate or civilise the negro has failed conspicuously. The Berber, Egyptian, Carthaginian, Greek, Roman and Arab has each in turn tried his hand at dominating and breaking in the negro, and in due time the negro has yawned, stretched and scratched himself, and the civilised pimple has fallen off; and, whilst one must be careful never to confuse our native, the Bantu so-called, with the true negro, yet there is enough of negro heredity in him to make the lessons of history invaluable in this connection. The influence that has been most powerful is, beyond all question, the Arab through the agency of Islam. The true value of the whole historical portent is obviously a factor that has never been realised by South African "statesmanship," and is quite beyond the intellectual horizon of the fat-headed fanatics who work through the media of racialism and socialism.

The uniqueness of the problem of the civilisation of South Africa, let alone of the continent south of the Sahara, being postulated, it is obvious that, generally speaking, the theories of arm-chair philosophers and the resources of politicians (even of those of large local experience), of social enthusiasts, and such like, of normal mental calibre are entirely incapable of finding a solution: that only can be found by one with wide local knowledge and experience, illumined by a gleam of that rare intuition that verges on genius. Moreover, every one of our problems participates more or less in that uniqueness as it is more or less separated from the purely material plane of economics and industrialism and is found lifting itself above racialism and mere politics and fanatical socialism into the region of strict equity and the fundamental rights of mankind. The true basis of the problem involved in this "strike" lies directly within the highest plane referred to, since the patent right of the native worker and "coloured man" of freedom to sell the best work he is capable of at the highest price obtainable is destroyed by a legal obstacle peculiar to the Transvaal mining laws (and absent from the laws of any other Province of the Union except perhaps of the Orange Free State), known commonly as the colour bar. In spite of loud and repeated assertions by both Government and Chamber of Mines that the factors provocative of this strike have no connection whatever with the colour bar, this grave injustice to the large bulk of coloured humanity on which the whole fabric of the South African community rests does in strict fact lie at the root of the whole question; and so far, therefore, the issue raised by the narrow-minded Labourites and backvelders of danger to a "white South Africa" is justified in spite of all these loud and ingenious disclaimers. Nothing can prevent (sooner rather than later) the removal from the Transvaal mining law of this iniquitous embargo, which will enable the bulk of unskilled work constituting the employment on the mines to be performed by natives and coloureds at such a reasonable scale of wage as will enable the mining industry to be run at costs permitting exploitation of the low-grade mines that are to-day closed down by reason of exorbitantly heavy operating costs.

The main considerations emerging, I think, from the above remarks are (a) that there are no precedents from other fields of industry or other periods applicable to our present problems, and (b) that not one in 500 students of these problems recognises that the true and only key to them is bound up with out unique ethnological conditions.

Viewed superficially, it was clear long before December last to everyone outside of trades union circles that the industrial and economic position throughout the whole of South Africa called for drastic revision: the national finances are faced with a serious deficit; the Civil Service (inclusive of railways and harbours) is heavily overstaffed and overpaid, and, wherever wages are being earned, the motto of "ca' canny" reigns supreme. The mines are also heavily overstaffed and overpaid, and much work that could be (and should have been) done by the better-class coloured workers was monopolised by the lowest class of Africanders at excessive wages; and in every department of industry overpaid wage-earners were putting in the worst and smallest service that they could venture on. The Government, the mines, and the more centralised kinds of wage-paying industry presumably agreed in secret on a simultaneous action for securing efficiency and economy.

The urgency for such action was at length so apparent that the imminence of a crisis was recognised not only by the trades unions (who determined to resist any reduction in wages, however essential to the existence of commerce and industry), but also in the political field by the Labour and the Nationalist (fanatically retrogressive and racial) parties, who formed an unnatural alliance to take advantge of the industrial upheaval in order to upset the Smuts Government at any cost to the community. So happy a chance of increasing the disorganisation of the community by fanning to red heat the many racial antagonisms inherent in the unique ethnological circumstances of South Africa—between Africander and European, between Christian and Jew, between British and Dutch-cum-German, and between "black" and "white"—was naturally seized on and utilised to the fullest extent by the well-financed, very able, subtle, numerous and ubiquitous International Socialist (Bolshevik) element which the Smuts Government, and even the British Government under the Milner regime, had taken no steps whatever to keep out of the country. In the welter of intrigue fomented at this crisis the trades union organisation was unconsciously captured completely by the Bolshevik organisation, and both Labourites and Anarchists were as completely fooled by the Anglophobe Africander promises of armed support. To anyone thoroughly familiar with his Africander it is not surprising that the bitterly reactionary "patriot" element proved the most cunning of the unholy brotherhood, and, whilst watching to see which way the rebel cat jumped, he delayed his contribution of armed "backvelders" just long enough to enable the Government to avert a terrible catastrophe by the skin of its teeth.

The crisis began to come to a head at the end of December, when the colliery workers were notified that their wages would be cut by 5s. a day, and the colliery owners refused to soften the blow by making the reduction into two cuts of 2s. 6d. each. At the new year the strike extended to gold mine and engineering shop workers, and then to all associated workers save a selected few engaged on services essential to the safety of the community, until the Municipal services along the 40 miles of the Witwatersrand were completely hung up, and the Government had to supersede in certain instances the striker-ridden Municipalities and organised their own services for the salvation of the populace. During the protracted haggling between employers and wage-earners that culminated eventually in the overpowering of the essentially trades union element by the "party of direct action," in the declaration by the latter of a general strike, speedily followed by mob-law atrocities and in proclamation of martial law, several compromises on the original terms offered by the em-

[illegible] working costs, whilst the wage-earners were bull-dosed by their voluble demagogues into the belief that they could (and would) bluff the employers down and retain their excessive wages whilst continuing to do nothing to earn them.

In the light of my commentary the records available to you of the development step by step of the final crisis should be intelligible enough for you to follow the interplay of the various factors specified, and my recent letters should help materially. They probably throw light on the mistakes made by the participants in this turmoil—of whom the bitter Africander element has assuredly shown itself the most cunning and adroit.

It is rather too soon to foresee the full industrial effects of this aborted revolution. The compulsion of inexorable economic laws towards reorganisation of all departments of industry (notably of our chief industry, mining) and cutting down of costs in every direction, together with enforcement of the utmost efficiency, are unescapable. How far confidence of oversea capital in South Africa as a field for investment can be restored time only can reveal, but could Capital only be sufficiently clear-sighted to realise it, the inevitable removal of the colour bar and the statesmanlike handling (were Smuts only courageous enough and the enfranchised element in this community only wise enough to do the right thing) of the crying disabilities of the coloured people would with certainty make this country about the most industrially stable community in the world. The crux of South Africa's whole position in the scale of civilisation lies in that last short parenthesis.

Parliament will have to delegate its full powers as judge and jury to some smaller body for the purpose of holding an even balance between the different parties to this bitter quarrel; but unless almost superhuman intuition, wisdom and resolution is vouchsafed to the politicians who in this country play at statesmanship this unique opportunity will only be fumbled and the "job" tinkered with, with the result of the mere postponement of an even more serious crisis.

For the moment the explosion is past, law and order are re-established, and the wage-earner has to return to his vomit; but the whole sub-continent cannot regain firm footing until it has waded through the depths of the Slough of Despond.

Three New State Mines.

In the course of a speech in the Assembly last week on the mining outlook, the Minister of Mines declared that he had three areas on the Far East Rand ready to be put up for tender when conditions improved. Doubtless one of the areas in question is the eastern section of the Geduld farm, which, it may be remembered, was put up to tender some time ago and subsequently withdrawn. With the general market on the mend in London and improving prospects for all South African securities, it may be hoped that the day is not far distant when the Government will offer the three areas in question for tender.

* * *

The Valuation of Gold Imports and Exports.

The *Board of Trade Journal* says: It has been recently suggested in the circulars issued by certain financial houses that in the trade returns issued by the Board of Trade imports of gold are calculated at their pre-war prices, whereas all exports of gold, except sovereigns, are taken at their actual bullion value at present prices. The Board are informed that the average values of imports and exports of gold bullion during 1921 have been as follows, and that this information has been furnished by the Board of Customs to inquirers:—"Imports of gold bullion, unrefined, 82s. 7d. per oz. troy; refined, 108s. per oz. troy. Exports of gold bullion, refined, 106s. per oz. troy." In Volume II. of the Annual Statement of Trade for 1920 (Cmd. 1504), both the quantities and values of the imports and exports of gold coin and bullion are given in detail, and these show what is the general practice of record. Imports and exports of all gold, except British coin, are entered at the market value returned by the importers and exporters, who are responsible for the correctness of their entries, and the averages resulting from a comparison of the declared weights and values correspond with sufficient precision to the means of the market quotations to demonstrate that the general practice is, in fact, in accordance with the official regulations, and not that suggested in the circulars in question.

Reviews.

SKINNER'S MINING MANUAL.

This indispensable work of reference, the *Mining Manual and Mining Year Book* for 1922 (thirty sixth annual issue), by Walter R. Skinner, editor of the *Oil and Petroleum Manual*, has just been issued, and we are glad to acknowledge the receipt of a copy. The price is 20s. net, 21s. post free inland and 21s. 6d. post free abroad. This reference work is the only annual book published dealing with mining and kindred companies operating in all parts of the world. This year's issue covers 1,000 pages, and contains full particulars of 1,400 mining companies—gold, diamond, silver, copper, tin, iron and coal, also exploration and mining investment companies, arranged in alphabetical order. The particulars given of each company include the directors and other officials, date of establishment, seat of operations, description of the property, with the purchase consideration, plant erected or in course of erection, present working results, ore reserves, details of capital, calls, dividends paid, and the financial position as disclosed by the latest accounts. Highest and lowest prices of the shares for the last three years are stated and latest price. Lists are also given of the officials connected with the companies and these comprise 3,700 directors and 935 mining and consulting engineers, their addresses and the names of the companies with which they are connected. Other useful features of the book are the supplementary index of private and dormant concerns or companies which have ceased to be of public or market interest; crushing tables and outputs from the principal gold mines, showing tons treated monthly, results obtained, and yield per ton; also annual yields and dictionary of mining terms by the use of which mining developments can easily be followed. A directory of manufacturers and exporters of mining machinery is also included. The book can be obtained from all booksellers, or direct from the publishers, Walter R. Skinner, 15 Dowgate Hill, Cannon Street, London, E.C.4., and *Financial Times*, 72 Coleman Street, London, E.C.2. Price, 20s. net; post free (inland), 21s.; post free (abroad), 21s. 6d.

Engineers and the Johannesburg Municipal Power Station.

In the outburst of public gratitude to the police and Defence Forces who saved the Rand in the Red Revolt of last week there is a danger that the community may forget what it owes to the engineers who ran the Municipal Power Station through the worst days of the general strike and subsequent fighting. For obvious reasons it may not be expedient to publish the names of the engineers who came to the rescue of the town in its very serious predicament, but it may be said that they included some of the leading engineers of the Rand, well known in the professional and commercial worlds. The assistance afforded at the Power Station was, of course, organised by the Scientific and Technical Societies, and they were naturally able to draw upon the talent of the two engineering societies, the South African Institute of Engineers and the South African Institution of Electrical Engineers. From these bodies, supplemented by employees of some of the big engineering firms, an adequate supply of highly skilled men was forthcoming, and that force, under police protection, ran the station through all the horrors of the revolt. The proximity of the Power Station to the "no man's land" bordering on the Reds' stronghold at Fordsburg made the task of guarding the station one of no small danger, but all the attacks of Red snipers were successfully repelled by the police in charge. What might have happened if, in addition to the town's other dangers, the electric light had failed need not now be enlarged upon. Suffice it that the public-spirited engineers who undertook to supply the town's essential light and power services, provided they themselves received adequate police protection, kept their word and "delivered the goods." The gratitude of the whole loyal community goes out to these brave men, who, we hope, will consent to accept at no distant date the thanks of those they succoured in some public, tangible form.

Government and the Coal Industry.

BILL PUBLISHED EMBODYING COAL COMMISSION'S RECOMMENDATIONS—INSPECTION & GRADING FOR EXPORT.

As foreshadowed in the report of the Coal Commission of last year, a Bill has now been published providing for the grading of coal for export and the closer control of the export trade generally by the State.

A *Government Gazette Extraordinary* has been issued containing the draft of an important Bill "to provide for the inspection and grading of coal produced in the Union which is intended for export beyond the Union or for bunkering steamers in South African ports; the prohibition or restriction of the export and bunkering of coal when the demand for coal for consumption within the Union warrants it, and the safeguarding of the supply of coal for public utilities."

Loading Coal at the Bluff, Durban.

Grading Certificates.

Clause 1 lays down that, after the expiry of six months from the commencement of this Act, no coal produced within the Union shall be used for export or for bunkering, unless it has been graded and a certificate in the prescribed form has been granted in respect thereof.

Under Clause 2, the Minister may appoint one or more grading committees, each consisting of a chairman and four members, to control the grading of coal. If the Minister is satisfied that not less than two-thirds of the collieries in Natal or of the collieries in the Transvaal respectively are prepared to adopt a method of grading coal in accordance with the principles laid down in the Act, he may appoint such persons as may have been nominated by the collieries of those respective provinces to be the grading committees for Natal and for the Transvaal respectively; provided that a grading committee so constituted may, in the discretion of the Minister, be dissolved by him at any time

The Grading Committees.

Alternative methods are proposed for the appointment of grading committees, and it is provided that members shall be remunerated in the manner to be prescribed by regulation. The grading committee is empowered to appoint a secretary and graders, inspectors, samplers, and other officers, to establish laboratories and testing stations, and to carry on such experimental and analytical work and tests as it may deem necessary for the efficient performance of its duties.

The method of grading is dealt with, and it is laid down that a grading committee may in its discretion refuse to issue a grading certificate in respect of any coal submitted for grading if the liability of such coal to spontaneous combustion is deemed by the committee to constitute a danger to life or property. The decision of the grading committee shall be final, but any colliery concerned may again apply to a grading committee for a grading certificate for its coal.

Provision is made for the inspection of coal by the committee or its officers, power being conferred to enter in or upon any colliery, storage bin, truck, vehicle, vessel, or other place where there is coal.

Levy on Collieries.

To cover the expenses and salaries of the grading committee, clause 7 states that "a grading committee shall make an initial levy of money on the collieries at the commencement of its operations. The amount so levied shall be based upon the tonnage shipped by the several collieries during the preceding six months. Thereafter a grading committee shall once every quarter levy an amount from the collieries in proportion to the quantity of coal supplied during the preceding quarter by each of them for export and bunkering. The total quarterly amount so levied shall be the estimated expenditure of a grading committee for the quarter in which the levy is made."

A grading committee will be a corporate body capable of suing and being sued.

Restriction of Export.

"If it appears to the Minister," reads clause 8, "that there is a real or apprehended scarcity of available coal for consumption within the Union, the Minister may by notice in the *Gazette* temporarily prohibit or restrict any or every colliery from exporting or bunkering coal until adequate supplies for local consumption have been assured."

HADFIELDS LTD.

WORKMEN EMPLOYED DURING THE WAR OVER 15,000.

East Hecla and Hecla Works, Sheffield, England.

WORKS AREA: OVER 200 ACRES.

ROWBOTHAMS

Self-Oiling Wheels and Axles

FOR MINE WAGONS.

ROWBOTHAM'S Wheels have withstood the most severe tests and have been adopted extensively in many of the largest collieries in England.

ALL the Wheels are fitted with a special frictionless bronze bush which prevents wear on axles and reduces friction to a minimum.

ALL THE WHEELS ARE MADE OF HADFIELD'S TOUGHENED CAST STEEL

AFTER being charged with oil they usually require no further attention for a month.

SO perfect is the lubrication, that the ease with which tubs fitted with Rowbotham's Wheels can be hauled is astonishing.

THE cost of oiling is, approximately, one penny per month.

STEEL CASTINGS AND FORGINGS OF EVERY DESCRIPTION.

Complete Stone Breaking and Ore Crushing Plants.

SOLE MAKERS OF HADFIELD'S PATENT

ERA
Trade Mark

MANGANESE STEEL

THE SUPREME MATERIAL FOR THE WEARING PARTS OF CRUSHING, MACHINERY, ETC.

Head Office for South Africa: 46 and 47 CULLINAN BUILDINGS, JOHANNESBURG.
PHONE 5900 TEL. ADDRESS: 'HECLA' BOX 1009
STORES: DENVER, TRANSVAAL (Adjoining Denver Station)

Bulawayo Agents:
WHITMORE & JACKSON,
17 & 18, Agency Chambers.

Salisbury Agents:
P. PEECH & CO.,
Angwa Street.

Natal Agents:
THOS. BARLOW & SONS
(S.A.), LIMITED,
Smith Street, Durban.

Under the next clause, if the South African Railways and Harbours Administration is at any time unable to make satisfactory contracts for securing the coal required for its purposes, it shall have power to call upon the collieries which supply coal suitable for its requirements to deliver such coal in proportion to the total amount sold by each colliery. The prices of the coal so requisitioned, as well as the precise quantity to be supplied and the conditions applicable thereto, shall, failing mutual agreement, be promptly determined by a board of arbitration, consisting of a representative of the collieries, a representative of the Administration, and a chairman, mutually agreed between the parties, or, failing agreement, to be appointed by the Minister.

The Administration may, if it finds itself at any time temporarily short of coal for its purposes, also intercept and apply to its own uses any suitable coal which may be in transit, such interceptions to be limited to the quantities urgently required by the Administration day by day, and the amount of any particular colliery's coal so intercepted in any one calendar month not in the aggregate to exceed 2½ per cent. of that colliery's monthly despatches of coal. The price to be paid for coal so intercepted is to be as mutually agreed between the colliery concerned and the Administration, and, failing agreement, the price is to be fixed by arbitration.

Durban Coal Loading Plant: Another View.

Stiff penalties are fixed for contraventions of the Act, for forging brands, or falsely issuing warrants. The Governor-General is vested with the power of making regulations.

Modder Deep and Geduld Ore Reserves.

In communications dated February 22 the Union Corporation announces the results of the re-valuation of the ore reserves of the Modder Deep and Geduld as at December 31 last. The ore reserves of the Geduld have been re-calculated as at 31st December last, and show a total of 3,545,000 tons, of an average assay value of 8·1 dwts. per ton over a stoping width of 62 inches. This is an increase of 325,000 tons as compared with the previous year, the value being higher by ·1 dwt. per ton and the width showing an increase of 1 inch. The ore reserves of the Modder Deep have been re-calculated as at 31st December last, and show a total of 4,375,000 tons, of an average assay value of 9·3 dwts. per ton over a stoping width of 77 inches. This is an increase of 275,000 tons as compared with the previous year, the value being ·1 dwt. lower and the width remaining unaltered.

AN APPEAL BY THE PRIME MINISTER.

General Smuts has issued the following appeal to the people of the Union:—

The upheaval on the Rand is over. It has been a great national tragedy and will produce a great aftermath of sorrow, suffering and distress.

The innocent are certain to be the greatest sufferers, especially women and children who had nothing to do with the strike, and whose breadwinners, not only in the mining industry but also in many other dependent industries, will for the present be unemployed. In the terror of the last few weeks, in the subsequent fighting, which approached the dimensions of regular warfare, they have passed through unspeakable agony, and now, owing to the wholesale dislocation of industries on the Witwatersrand, they run the risk of the most serious want and privation. The Government, the Provincial Administration, and the local authorities will do their best to provide work for the unemployed, but even so there is certain to be want and distress on a large scale, and mostly among those who are not workers and whom unemployment schemes will not benefit.

APPEAL TO THE UNION.

I appeal to the public of South Africa to come to the succour of these people and to raise a great fund for the relief of distress on the Rand. The situation on the Rand calls for large-hearted sympathy from the whole of the Union, and that sympathy can best be shown by generous assistance in this dire hour of need. The Administrator of the Transvaal will create the necessary organisation to administer the contributions of the public and relieve the distress on the Witwatersrand. I have asked for the Administrator of each Province to take the lead and direction in the collection of funds in his Province and to forward the collections to the Administrator of the Transvaal, and I would ask all churches, local authorities, public bodies and other institutions in each Province to give their Administrator the most zealous support in the execution of this great and beneficent work.

What Union Industries Pay Out.

The fifth industrial census, giving statistics of factories and productive industries (excluding mining and quarrying) in the Union for 1919-20, is issued. The following figures show the advance in industries:—

	1916.	1920
Establishments	3,998	6,890
Land and buildings	£11,774,671	£18,562,597
Plant	£15,777,237	£23,490,224
Labour		
European	39,524	62,483
Coloured	61,654	113,037
Wages		
White	£6,739,966	£13,922,258
Other	£2,172,891	£5,496,832
Materials	£22,315,587	£53,851,256
Products	£40,434,882	£92,913,844

The total salaries and wages paid were £19,119,090 out of a gross output of £92,913,000, as compared with a total of £17,363,000 paid in salaries and wages out of a total output of £34,653,000. While industries paid out 20 per cent. of the output in wages and salaries, the gold mines paid out 50 per cent.

C. C. WAKEFIELD & Co., Ltd.,

Manufacturers of

High-Class Lubricants

FOR

RAILWAY, MARINE, ELECTRICAL, MINE and COLLIERY WORK.

Makers of the Famous

"CASTROL" MOTOR OILS.

Patentees and Makers of

MECHANICAL LUBRICATORS.

P.O. Box 2123. Telephone 6418 Central
12a & 12b, 1st Floor, STELLA BLDGS.,
Rissik Street South,
JOHANNESBURG.

P.O. Box 1521. Telephone 108.
15/16, HULSTON'S BUILDINGS,
Smith Street,
DURBAN.

Telegrams: "CASTROL."

STANDARD BANK

**OF SOUTH AFRICA,
LIMITED.**

(With which is incorporated the African Banking Corporation, Ltd.)

Established 1862.

Authorised Capital - - - -	**£10,000,000**
Subscribed Capital - - - - -	**£8,916,660**
Paid-up Capital - - - - - -	**£2,229,165**
Reserve Fund - - - - - -	**£2,893,335**

GENERAL BANKING BUSINESS transacted at all Branches and Agencies; DEPOSIT and CURRENT ACCOUNTS opened; PURCHASE and SALE of INVESTMENT SECURITIES effected, etc.

SAVINGS BANK ACCOUNTS opened on terms, particulars of which may be obtained on application.

The BANK is in close touch with TRADE and INDUSTRIAL CONDITIONS, both local and overseas, and special attention is given to COMMERCIAL ENQUIRIES from customers.

EXECUTOR and TRUSTEE business undertaken.

Over 380 Branches and Agencies in Africa.

Agents and Correspondents throughout the World.

USE

"PORPOISE"

BRAND

ANTIFRICTION GREASE

Used for years by the majority of Mines all over South Africa.

Manufactured by

South African Lubricants & Chemical Works, Ltd.,

DURBAN & JOHANNESBURG.

Phone 1618, *Johannesburg Branch Office.*

The Mineral Resources of Uganda.

SUGGESTED IRON AND STEEL INDUSTRY—COAL, OIL AND BASE METALS—RARE MINERALS.

In a recent issue, particulars were given of the iron ores of Uganda. The following extracts from the first annual report of the Geological Survey of the Protectorate, written by Messrs. E. Wayland and W. C. Simmons, deal with other important mineral resources of the country.

The problem of the iron and steel industry in Uganda falls under three main heads: (a) the improvement of the present native industry; (b) the Europeanizing of the native industry; and (c) the introduction of essentially European methods and appliances for the manufacture of goods for local and adjoining European markets. In all these cases methods of smelting other than those now employed in Uganda must be introduced. For the purpose of improvement of the local industry natives must be taught not only how to make a greater variety and better quality of tools, but also the best ores for particular purposes; and the natives must be shown how, by the use of better furnaces and a much more effective blast, to turn out more material in less time. A Shields fan and a simple kind of furnace have already been suggested, but not tried; a Catalan has been suggested, tried, and in the circumstances found wanting. The writers have no doubt that the Catalan, which has been used with such good results in Europe is, when adapted to local conditions, the type of furnace best suited to the native industry in Uganda. Owing to the mechanism by which the blast is produced, a Catalan cannot be erected wherever ore, fuel, and flux are easily available. It must, in fact, be placed conveniently near running water which can be trapped at a level somewhat above the cistern and not too far away from it. The necessary conditions are seldom met with except in the vicinity of mountain streams or waterfalls; and, unfortunately, the continuous supply of water necessary to the proper working of the blast, which would probably be in the neighbourhood of 2,000 gallons per hour, cannot be supplied from below through the medium of a ram or any practical form of force or suction pump; but a small air-lift installation would solve the difficulty admirably, and thus serve greatly to minimise a factor which limits to so large an extent the use of this type of furnace.

Details of certain schemes over and above that of electric smelting, which will have to be seriously considered before long, are being worked out at the present time, but they are not yet sufficiently advanced to warrant publication now. It would seem probable, however, that in one district, at any rate, it may be possible to produce a good class of pig-iron at £6 per ton.

Manganese.

Manganese, in small quantities, is widely distributed in Uganda. It occurs in association with the ores of the lateritic ironstones, and in nodules in surface deposits; the ore generally takes the form of pyrolusite. A quartz-rock, associated with the argillites in the Botanical Gardens, Entebbe, carries thin plates and films of pyrolusite along its joint and fracture planes. Manganese is not likely to be of any commercial value in Uganda except in the event of the establishment of an iron and steel industry.

Chromium.

Chromite occurs in connection with mica-schists, and is found as the "iron ore" content of some basic intrusions. It has not yet been found in large quantities. Roccati records it from Ruwenzori. It is extremely doubtful whether it will ever pay to export chrome ore from Uganda.

Zinc.

The usual zinc ores have not been found in the Protectorate, but franklinite has been found in small quantities in some pegmatites. In America franklinite is used as a double ore, that is, of zinc and iron. It is of no value at present in Uganda.

Coal.

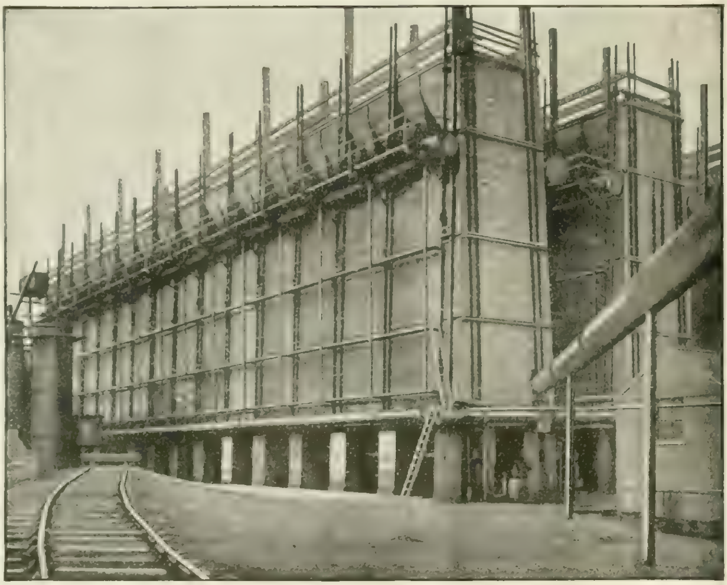
Coal has been reported from two places in the Protectorate, but both discoveries await confirmation. Coal is known in the Karroo (Permo-Carboniferous, or Permo-Triassic) beds of the Tanganyika Territory, near the mouth of the Ruhuhu River, and on the opposite side of Lake Nyasa in the Nyasaland Protectorate; while coal beds of a very promising nature are cut by the Songwe (Songue) and Kivira Rivers to the north-west of the lake. Coal is also known on the western shores of Lake Tanganyika, in the Congo, in beds of similar age. The age of the argillite series is not definitely known, but, in all probability, they are to be correlated with the Karagwe beds of the Tanganyika Territory, which themselves belong to the Karroo series. Thus it will be seen that the question of the occurrence of coal in Uganda is one deserving of investigation. Since the close of the financial year 1919-20 some preliminary investigations have been made and have resulted in an important discovery. Some unaltered beds of the argillite series have been found; these yield fossil-plant impressions. The remains as yet brought to light are very fragmentary and cannot be determined with absolute certainty, but the two genera *Gangamopteris* and *Psygmophyllus* appear to be represented. It would seem, then, that the argillites are wholly, or in part, of Permo-Carboniferous age (Lower Karroo), and may be correlated with the coal-bearing beds of the Tanganyika Territory. It is to be remarked, moreover, that the Ecca coal-measures of South Africa are of similar age and yield similar remains. Another possibility is the existence of lignite in Miocene beds, which may flank the great lakes.

Petroleum.

For some years past petroleum has been known to exist in the vicinity of Lake Albert. The oil seepage which is to be seen on the shore about 3 miles north of Kibero consists of a mixture of heavy bituminous oil and sand saturated with water. A report of an analysis of the material made at the Imperial Institute shows that, as far as the sample dealt with was concerned, 9 per cent. of water separated on standing and a further 19 per cent. was removable by distillation. The dry material thus obtained was a black, semi-fluid oil, having a specific gravity of 0·961 (at 15° C.) When subjected to fractional distillation it yielded 1·1 per

GOVERNMENT EXAMINATIONS.
METAL. RESULTS, 1921. COAL.
Total METAL MANAGERS Certificates
Granted in S.A., 1921 36
Secured by Students of Messrs. LUCAS & WOLFE .. 21
Balance for S.A. 15
7 COAL MANAGERS Certificates obtained in 1921.
Total OVERSEERS Certificates (Metal and Coal)
Granted in S.A., 1921 61
Secured by Students of Messrs. LUCAS & WOLFE .. 25
Balance for S.A. 36
Total SURVEY Certificates
Granted in S.A., 1921 11
Secured by Students of Messrs. LUCAS & WOLFE 9
Balance for S.A. .. . 2
C. D. LUCAS & B. E. WOLFE,
MINING ENGINEERS.
OFFICES & LECTURE ROOMS: PERMANENT BUILDINGS.
Postal Address: Box 6301 JOHANNESBURG

OIL SHALE DISTILLATION
MINERAL OIL
REFINING AND PARAFFIN WAX
PLANT OF ALL DESCRIPTIONS



OIL SHALE RETORTS.

A. F. CRAIG & Co., Ltd.,
PAISLEY.

40 years' experience in designing and manufacturing
MINERAL OIL PLANT.

London Office: 12, Old Jewry Chambers, E.C.

cent light petroleum, 12·4 per cent kerosene, 55·6 per cent of lubricating oils and solid hydrocarbons, and 30·9 residue consisting of coke and pitch. The characteristics of the light petroleum and the kerosene obtained by distillation, show that these products were not present originally in this sample of oil, but were produced by the "cracking" of the solid hydrocarbons, which took place during the distillation. The original oil is essentially of a highly bituminous character, and the proof of this is afforded by the behaviour of the sample when examined as a bitumen or natural pitch. Though the oil is too viscous for use as marine fuel, it might possibly be employed as a fuel for a Diesel type of engine consuming heavy oils, since it has a high calorific value, and contains very little sulphur. This bituminous material from Lake Albert is chiefly of interest as furnishing surface evidence of the probable existence of petroliferous strata in the region which it was found, and the occurrence should be fully investigated.

A preliminary geological survey of the area near Kibero has already been made, but the results to date are not very encouraging. There can be little doubt that the oil is coming up the scarp fault. The rocks near Kibero are far from attractive from the oilman's point of view. A seepage appears not only at Kibero, but, so the native fishermen say, also on the Congo side. Moreover, the fishermen tell of "explosions" which sometimes occur well "out to sea" in the lake. They say a rumbling noise is accompanied by an uprush of water and oil. The presence of a seepage or two cannot be regarded as indicating the presence of commercial quantities of oil; nor must the existence of a hot spring and salt near Kibero be taken as corroborative evidence, although such things are commonly classed as hopeful indications.

Assuming the presence of an oil reservoir under the downthrow of the lake depression, there are two main possibilities: (1) It is in the argillites, in which case its continuation, or another, may be looked for on the land; or (2) it is in some other bed above the argillites which has been faulted down beneath the lake.

The apparently inhospitable nature of the argillites as far as petroleum is concerned in this part of the country has been demonstrated; and until quite recently no facts were known which might be taken to indicate the presence below the lake of beds other than the much-faulted argillites. But a short while ago some fragments of fossil bone reached the office of the Survey. They were said to come from the escarpment to the south-west of the lake. There is little doubt that they belong to post-argillite times, and, indeed, they suggest Miocene. The important role which Miocene deposits have played as oil reservoirs in various parts of the world is well known, and although the proof of the Miocene age of the fossils would not in itself go very far to solve the problem of the Lake Albert oil, it would be highly suggestive; and in any case the study of the geology of the beds from which they come is a matter of great importance in this connection. The Lake Albert region is a critical one, because if it can be shown that the oil (payable or otherwise) is seeping from the argillites, considerable possibilities will be opened up, for in Uganda the argillite series is very extensively represented and places are known where it presents much more hopeful facies than it does near Lake Albert.

It might be thought that too much stress has been lain on the anticline or dome as an essential oil structure; such, however, is probably not the case in this instance. Although it must be admitted that the anticlinal theory has been pushed too far, and that some oil reservoirs, at any rate, have been proved to bear to the geography of ancient shore deposits a relationship more definite than that to be expected of reservoir to trap-structures on the line of what was orthodox theory more than thirty years ago; yet, in the absence of any known reservoir rock it is impossible to determine the local significance of any other trap or retardation structure in relation to petroleum. The discovery of so generally favourable a structure as a dome would not, in the circumstances, be considered of much value by experienced oil geologists, except for the purpose of purely experimental boring, and certainly nobody would dare to pronounce very hopefully upon it; but the individual, company, or Government, willing to take a very "sporting" chance in the face of decidedly big risks, must have something to go upon, and the best one can offer in the present connection is a dome within an area supposedly petroliferous.

Some of the beds of the argillite series have proved on examination to resemble the Hospital Hill slates of South Africa in that they are highly siliceous. They may be regarded as generally ferruginous sandstones of exceedingly fine grain. Some of them are decidedly absorbent, so it is possible that a reservoir may be located among them. But this very fineness of grain renders small the probability of bringing in as producers any oil well sunk into such a reservoir. There is, however, the possibility that pressure may cause a fine-grained reservoir to express petroleum into fissures at depth, but it is not possible to estimate the quantity that fissures, thus supplied, will yield; generally it may be regarded as low. None-the-less, if a petroliferous horizon can be located in the argillites a very important fact will have been established, because the argillites in some parts of the country contain sandstones and grits which might function admirably in the storage of petroleum. In this connection it may be as well to call attention to a limestone, presumably a bedded one, discovered by A. E. H. Reid.

It must not be supposed that the rather discouraging results obtained up to date are in any way a justification for discountenancing further search, for such is far from being the case. The problem is not a simple one, and, as in most cases where the geology of the country is concerned, the necessary facts for its solution are largely hidden from view by a thick mantle of surface deposits and vegetation.

The possibility of petroliferous beds in the argillites is, by reason of their wide distribution, an attractive one, and it is believed that when this possibility is brought home to those in Britain who interest themselves in oil, it will be seriously considered and investigated by their representatives from the point of view of commercial enterprise.

Monazite.

This mineral is of very wide distribution, but only two localities are known where it occurs in quantity. One of these is conveniently situated with regard to transport and mining facilities, and in the event of the deposit proving sufficiently extensive the winning and marketing of the mineral may become a commercial proposition.

Zircon and **Thorite** are also reported in Uganda.

Certificates issued by the Mines Department for the period ending 28th February, 1922:—Mine Managers (metalliferous mines): R. S. Cunliff, J. Levieux, E. P. Willcocks; (non-fiery collieries): M. Baumann, P. J. L. Bok, H. Pirow. Mine Overseers (collieries): D. McBride.

MINES DEPT. EXAMS.
CERTIFICATES AWARDED INSTITUTE.

MANAGERS' EXAMS., September, 1921, January, 1922.

We obtained 15 out of a total 22 certificates awarded in South Africa

	Metal	Coal	Totals
Ours	9	6	15
Rest of S.A.	4	3	7
	Total for S.A.		22

OVERSEERS' CERTIFICATES (Metal).
So far as we know we have only had 6 failures during 1921, and secured two thirds of the certificates issued in S.A. during the past two years.

TUITION (Metal or Coal) by class, correspondence or privately
Mining Institute (Prof. Yates),
St. James' Mansions, Eloff St. Johannesburg

Financial Position of the S.A.R.

ESTIMATES FOR THE COMING YEAR—HOW THE STRIKE AND REVOLUTION AFFECTED THE SERVICE.

The estimates of expenditure of the S.A. Railways and Harbours for the forthcoming financial year [illegible] announced [illegible] by the Minister. The total [illegible] as compared with [illegible] in the current financial year, and this is made up as follows: Railways, £22,7[illegible]; Harbours, [illegible]; and steamships, £216,006, representing decreases of [illegible] respectively.

These figures include the estimated expenditure on the railways and harbours in South-West Africa, which in future will be operated as a part of the Union Railways and Harbours system.

The principal decreases in regard to railways are as follows:—Maintenance of Permanent Way, £484,846, principally due to reduced price of materials and the restriction of expenditure to minimum requirements, the curtailment of work on maintenance of stations, etc., to services which cannot be postponed, reduction in the provision for wages of the permanent way staff consequent upon the rearrangement and the reduction of gangs and the curtailment of minor works.

Running expenses, £429,542, principally due to a reduction of one and a half million train miles and the extension of hours of duty.

Traffic expenses, £535,314, mainly due to the reduction of staff as a result of the falling off in traffic, extension of hours of duty and the closing of a number of stations, also to payment of less overtime and Sunday time.

Depreciation, £825,260. This contribution has been reduced to permit of a special contribution of £500,000 being made to write down the value of stores stock and also to provide an additional contribution of £150,000 to the betterment fund.

Miscellaneous, £1,164,725, almost entirely due to the cancellation of the abnormal cost of living allowance.

The increases, in addition to the two contributions above mentioned, include £353,478 under the heading of interest on capital, partly due to under-estimate in 1921-22. The total railway personnel provided for under these estimates [illegible] 80,590, as compared with 81,530 in the present financial year.

Effect of the Revolution.

The loss to the revenue of the country caused by recent disturbances cannot yet be accurately estimated. The railways are an index to the loss of revenue to the country, and the figures are staggering. It may be of interest to show what the actual receipts were during the period of the strike, commencing with the first week in January of this year, and to note the changes. During the first week of each month there always is an increase in revenue, this being explained by the fact that season ticket holders—all over the Union Railway system—renew their tickets during that period.

The actual receipts are as follows:—Week ended January 7th, £388,120; January 14th, £425,135; January 21st, £417,791; January 28th, £409,276; February 4th, £402,706; February 11th, £336,830; February 18th, £324,410; February 25th, £312,540; March 4th, £349,351

The figures for the weeks ended March 11th and March 18th are not yet available, but it can be stated that during these two weeks practically all traffic in the Transvaal ceased and the loss of revenue resulting therefrom will be enormous. Furthermore, during the period of Martial Law over one thousand railwaymen of all grades have been withdrawn from railway work and have been mobilised for fighting purposes. The loss to the country on the railwaymen's pay alone can safely be placed at £40,000 per week during the past two weeks of strife, and there must be further allowance for the loss during the previous eleven weeks. The loss to the country on railways alone cannot be far short of £500,000.

THE HYDROGEN, OXYGEN & PLANT CO., Ltd
(REGISTERED IN ENGLAND).
99, PARK ROAD, NEWTOWN, JOHANNESBURG.

Manufacturers of .. .. Hydrogen and Oxygen in bulk for Industrial and Medical purposes. .. ..

Sole Representatives and Stockists for the
Alloy Welding Processes,
Limited,
LONDON.

Manufacturers of .. .. Electrodes and Plant for Oxy-Acetylene and Electric Welding purposes. .. ..

General Managers in S.A. :—
Messrs. DOWSON & DOBSON, LIMITED, JOHANNESBURG.

ALL COMMUNICATIONS TO BE ADDRESSED TO THE WORKS.

'Phone 3053 Telegrams : "HOPCO." - - - P.O. Box 5404.

THE BUSY MAN'S PAGE.

What to Read in the Technical Press.

Mining and Metallurgy.

Horses and Other Animals in Mines.—Iron and Coal Trades Review, February 17, p. 236.

Electro Deposition of Metals.—"Beama," February No., p. 138.

International Disposition of Minerals.—Mining and Scientific Press, February 4, p. 148.

Engineering.

Pipe Friction and Pump Efficiency.—Iron and Coal Trades Review, February 17, p. 238.

Iron and Steel.

Import Values in Steel.—Iron and Coal Trades Review, February 17, p. 237.

Electric Furnace Operation.—Iron and Coal Trades Review, February 3, p. 166.

Coal.

Low Temperature Carbonization.—Iron and Coal Trades Review, February 17, p. 230.

Ferro Concrete Bunker and Coal Handling Plant.—Iron and Coal Trades Review, February 17, p. 240.

Coal Production Costs.—Iron and Coal Trade Review, February 17, p. 243.

A Great Fuel Works.—Colliery Guardian, February 17, p. 405.

Pulverized Fuel Systems.—Colliery Guardian, February 10, p. 341.

Ignition of Firedamp.—Colliery Guardian, February 10, p. 347.

The Morwell Brown Coal Scheme.—British Engineers' Export Journal, February, p. 375.

Transport.

Railways and Road Transport.—Iron and Coal Trades Review, February 17, p. 240.

Electrification of Industrial Plant Railways.—Iron and Coal Trades Review, February 3, p. 138.

Western Australian Government Railways.—South African Railways and Harbours Magazine, March, p. 195.

South African Grain Elevator Scheme.—South African Railways and Harbours Magazine, March, p. 207.

Economics.

Some Remedies for Bad Trade.—Iron and Coal Trades Review, February 17, p. 242.

Co-Partnership.—Colliery Guardian, February 10, p. 354.

Electricity.

Main Line Electrification in New Zealand.—English Electric Journal, January 22, p. 36.

An Electric Winding Installation.—English Electric Journal, January 22, p. 50.

English Electric Camshaft Control.—English Electric Journal, January 22, p. 27.

Railway Electrification and Garrett Locomotives.—The Engineer, February 17, p. 188.

Interconnection of Alternating Current Power Stations.—The Engineer, February 17, p. 193.

Fuel Consumption in Central Stations.—Colliery Guardian, February 17, p. 423.

Prime Movers for Small and Medium Powers.—"Beama," February, p. 147.

Retardation Method of Determining Losses in Electrical Machines.—"Beama," February, p. 128.

The Institution of Electrical Engineers.—Electrical Review, February 17, p. 217.

Restoration of Fortnightly Accounts.

According to a London mail week exchange, the belief is prevalent in some quarters that, subject to the consent of the Treasury, Fortnightly Accounts and contangoes may be restored earlier than the date fixed for the expiration of the Treasury Regulations. In fact, it is suggested that a commencement may be made as from 25th March, which would be a convenient calendar date, and that in the first instance Carry-over facilities would only be accorded to approved Clearing stocks. If there is anything in this idea it will mean that the new rules will have to be passed and confirmed prior to the 25th March and to the election of the Committee. It seems more probable that the confirmation of the new Rules will, at any rate, be left to the new Committee.

GEDULD PROPRIETARY MINES, LIMITED.

(Registered under the Limited Liability Laws of the Transvaal.)

NOTICE TO SHAREHOLDERS.

NOTICE IS HEREBY GIVEN that the Twenty first Ordinary General Meeting of Shareholders in the Geduld Proprietary Mines, Limited, will be held in the Board Room, Consolidated Building, Fox Street, Johannesburg, on FRIDAY, 26th MAY, 1922, at 3 p.m., for the following purposes, namely:

1. To receive and consider the Balance Sheet and Profit and Loss Account, together with the Directors' and Auditors' Reports, for the year ended 31st December, 1921.
2. To confirm the appointment of Mr. P. M. Anderson as a Director in place of the late Mr. M. McCormack.
3. To elect two Directors in place of Sir Henry Strakosch and Mr. G. Sonn, who retire by rotation in accordance with the provisions of the Company's Articles of Association, but are eligible and offer themselves for re-election.
4. To fix the remuneration of the retiring Auditors, Messrs. Chas. Stuart & F. E. Roberts and Messrs. F. W. Diamond & English and to appoint Auditors for the ensuing year.
5. To transact any other business that may be transacted at an Ordinary General Meeting.

The Transfer Books and Register of Members of the Company will be closed from the 19th May to the 9th June, 1922, both days inclusive.

Holders of Share Warrants desirous of attending in person or by proxy, or of voting at the Meeting, must either produce their Share Warrants for verification or deposit them:

(a) At the Head Office of the Company in Johannesburg, at least twenty-four hours before the time appointed for the Meeting;

(b) At the London Office, Pinners Hall, Austin Friars, E.C., or in Paris with Mr. M. Tourret, 34 Rue Vignon, at least thirty clear days before the day appointed for the Meeting,

together with a Statement in writing of their names and addresses, and must comply with the other conditions applicable to Share Warrants.

By Order of the Board,
UNION CORPORATION, LIMITED,
Secretaries.
per J. McFADYEN,

Head Office: 94 Main Street
(P.O. Box 1125), Johannesburg,
24th March, 1922.

GARGOYLE

Lubricants

A grade for each type of service

Production's Sly Enemy

FRICTION—

the unseen enemy of production in your plant.

IF FRICTION COULD SPEAK, it would confess, "I am robbing you of power, of production, of profit."

If your machines were human, they would tell you that friction is pain—and pain is the forerunner of trouble.

What will guard you against wasteful friction? Correct lubrication—and that only. The subject is well worth your most serious thought.

We are in a position to reduce the wear and tear on your machinery—to reduce power waste and so increase your useable power.

This increased power means increased production without added power cost. It means improved profit. It will protect your pocketbook from friction theft.

We can bring to bear on your plant the most complete fund of lubricating experience in existence. It embraces thorough engineering knowledge and wide practical experience.

We suggest you get in touch with our nearest branch

VACUUM OIL COMPANY OF S.A. LIMITED

Cape Town · Johannesburg · Pretoria · Kimberley · Bloemfontein
Mossel Bay · Port Elizabeth · East London · Durban · Lourenco Marqes.

"HUMBLE" SAFETY DETACHING HOOK

SOLE AGENTS:

GEO. CRADOCK
—AND CO. (S.A.), LTD.—
75-77, CULLINAN BUILDINGS.

P.O. Box 316. Telephone 539.
Tel. Add.: "ROPES."
JOHANNESBURG.

REID BROS.
(S.A.), LIMITED.

Sole Agents for:

CARRON COY.—HAULAGE GEARS, Etc.
ANDERSON, BOYES & COY.—ELECTRIC COAL CUTTERS.
HARDY PATENT PICK COY.—"HARDIAX" AIR COAL CUTTERS.
BLANTYRE ENGINEERING COY.—SCREENING PLANT.
WM. ARNOTT & CO.—CORNISH AND LANCASHIRE BOILERS.
QUASI-ARC ELECTRIC WELDING APPARATUS.
SMALL & PARKES—BELTING, PACKING, Etc.
FINNEY PATENT HAND PUMPS.
WELDLESS STEEL CHAINS.
CHAPMAN DOUBLE BALL BEARINGS.

JOHANNESBURG.
P.O. Box 802 'Phones 6070/1
AND AT DURBAN.

The South African Mining and Engineering Journal.

HEAD OFFICE: 176 180 Stock Exchange Buildings (2nd Floor), Fox Street, JOHANNESBURG, Union of South Africa.

Telephone **913.** P.O. Boxes **963** and **4573.**

Cables and Telegraphic Address: "MINING JOURNAL."

ANNUAL SUBSCRIPTION RATES: Oversea, £2; Union of South Africa and Rhodesia, £1 10s.; Local Delivery (Town only), £1 6s., payable in advance.

AGENTS FOR GREAT BRITAIN AND AMERICA: Argus South African Newspapers, Ltd., Byron House, 82-85, Fleet Street, London, E.C. 4.

Copies of this Journal are obtainable at all Branches and Agencies of the Central News Agency, Ltd., at all News Agents and Railway Bookstalls throughout South Africa, and at the London Agency as above.

CONTENTS.

	PAGE
Articles:	
Rejuvenation of the Rand	989
Rhodesia's Mines Output in 1921	990
The Diamond Industry	991
The Strike and the Revolution	993
Government and the Coal Industry	995
The Mineral Resources of Uganda	999
Financial Position of the S.A.R.	1002
Editorials:	
Incidents and Lessons of the Revolution	1005
Work for the Unemployed: A Suggestion	1005
Busy Man's Page	1003
The Week in the Share Market	1007
Letters to the Editor	1008
Trades and Industries Section:	
The Week in the Mining Material and Engineering Trades	1009
Company Meetings: The Wolhuter	1013

EDITORIAL.

INCIDENTS AND LESSONS OF THE REVOLUTION.

The Red Revolution on the Rand is now over. Since our last issue went to press Martial Law has been relaxed and the Police have been busily engaged in "combing out" areas known to harbour people with revolutionary sympathies. Large numbers of troops, burghers and citizens, who responded so loyally to the call to arms, have been disbanded and have returned to their homes. Considerable forces are still retained in the disaffected areas, and the whole of the Reef is under the control officers appointed by the military authority. The prison camps and jails are full, and Police and C.I.D. officials are busily engaged in separating the silly sheep from the dangerous goats. All the Trades Unions have called the strike off, and the men are flocking back to the mines, whilst the mines are re-engaging as many men as they can and are not forgetful of the claims of those who answered the call in the hour of need. Industry is slowly beginning to recover from the stunning blows which have been dealt it during the past few weeks, and the ordinary conditions of social life are being resumed. Rand Magistrates are working at high pressure and are dealing with scores of offenders daily. General Smuts has returned to Capetown and received a considerable ovation on his return from the scene of the revolutionary drama. The Prime Minister announced the appointment of an impartial commission to enquire into the lamentable disturbances, and it was noteworthy that the Labour members and the extremist Nationalists appeared to be in a very chastened mood. According to authorities competent to judge, South Africa's credit has in no way been affected by the outbreak. On the contrary it is believed by many that South Africa has enhanced her reputation because of the efficient manner in which the revolt has been suppressed. At the same time poverty and distress rankle in our midst, and it is quite clear that a supreme effort will have to be made by the Government and the community at large in order to alleviate suffering and hardship. In this connection we are glad to reproduce in this issue the Prime Minister's appeal and also a letter from His Honour the Administrator of the Transvaal.

These are but a few impressions obtained from a picture so crowded with details that it is impossible to tell within the pages of a weekly technical journal anything like a full and coherent story of the momentous events of the past fortnight. Each day fresh details of the Rand's latest and greatest escapade in its favourite pastime of revolution are coming to light. At this juncture one can only say that the Reef has had a very narrow escape from the usurpation of the functions of legitimate Government by a Soviet of assassins. In our estimate the Government proclaimed Martial Law not at the eleventh hour, but a few seconds before the fateful stroke of midnight, and the Rand was saved from all the sustained horrors of Petrograd by the spirited action of the citizen forces and burghers who so ably and readily responded to the call and reinforced the magnificent but hard-pressed police. Soldiers and civilians, men and women, police and burghers have all played an heroic part in this defence of the constitution of South Africa. The conduct of the natives, too, has been admirable. The crisis is now over, and we hope and believe that the mines and other industries of the country will be able to work out their own salvations with economic freedom and release from tyranny. The much debated Chamber of Mines' letter has assisted in "developing the situation" and in proving that lurking beneath the camouflage of an industrial dispute has been a deadly snake in the grass—the reptile of Bolshevism. South Africa has proved, as Winnipeg proved some months ago, that British Dominions do not want and will not have Red rule.

And so the night of terror has passed. But before the dawn breaks into a new and brighter day, South Africa demands that the ringleaders of this damnable conspiracy shall answer with their lives for the great harm that has been done. Good lives, both British and Dutch and Coloured, have been sacrificed on the mad altar of revolution. Soldiers and police of both races have laid down their lives in the suppression of the revolution. Good citizens have been shot and innocent natives have been murdered. The blood of any one of these is worth far more than the blood of all the dirty mischief-making aliens who apparently, without let or hindrance, have been allowed to enter this country and to corrupt and mislead her peoples. South Africa needs peace, and we believe that the deplorable events of the past fortnight on the Rand will tend to draw the two great white races and the black race together in an effort to utterly destroy the common Bolshevist foe. But first of all let us know who these foes in our midst really are, and let the people of the country see to it that those who have brought death and suffering into our midst are made to pay the full penalty for the crimes which they have wrought.

WORK FOR THE UNEMPLOYED: A SUGGESTION.

South Africa has just weathered one of the worst storms that it has ever encountered in all its tempestuous history, and the country is now beginning slowly to recover from the effects of the abortive effort to convert the Union to the damnable doctrines of the disciples of Lenin and Trotsky. Although the Red plot has failed, and although the moral gain of the anti-revolutionaries in this country and in others will be immense, the loss in blood and treasure on the Rand has been hideous. The greatest and most urgent need of the country at the present is the rehabilitation of trade and industry in the quickest possible time. And this, naturally enough involves the finding of work for several thousands of unemployed who have lost their jobs on account of the dislocation of the mining industry, which has reacted on practically every other branch of industry in the country.

Before the strike the unemployment problem of the Union was distressingly acute; the strike and its revolutionary aftermath have greatly accentuated the gravity of the matter. Some weeks ago the Premier and the Minister for Lands declared that the Government had under consideration the launching of large schemes of relief work, particularly in the direction of afforestation and irrigation. It is quite clear that work for several thousands of men is urgently and immediately required. This will naturally call for the raising of a large sum of money, but it is satisfactory to learn that South Africa's credit is good and it is understood that a loan of some millions can be raised overseas without difficulty if it is required.

In connection with this problem of relief work there must be as little delay as possible, but it is obvious that the cost of such schemes and their reproductive aspect must be carefully considered. What the country needs is not projects that will take years to show any appreciable return on capital invested but undertakings that will yield as large a revenue and employ as great a number of men as possible in the shortest time. And looking around the Union there does not appear to be any more attractive undertaking than that of opening up the vast and fertile areas of Northern Zululand and Eastern Natal. There are in this part of the Union many thousands of acres of land which are amongst the most reproductive in the country lying within fairly easy reach of existing lines of communication, at no great distance from the coast, and only awaiting the completion of railway lines in order to add to the presently-productive areas of the country a vast annexe of remarkable fertility.

The key to the development of this scheme is the construction of a railway line from Matubatuba to Umsinene and its continuation to Chaneni. Matubatuba is on the existing North Coast line to Somkele, and the route from this point to Umsinene through Hluhluwe already has been surveyed by the railway engineers. This line will pass through some excellent sugar-cane country and also through land eminently suitable for mixed farming. Stock-raising, cotton and sugar-growing are certain to be important branches of industry in this area in the near future, and it is important to observe that the greater part of this area consists of Government or Crown lands. From Umsinene station to Chaneni is a distance of from 55 to 70 miles, and a railway extension from Umsinene onwards would throw open for settlement many hundreds of square miles of what is probably the richest soil in Southern Africa.

It probably will be news to many people to learn that Mr. R. A. Rouillard, well known in Natal as the prime mover in the establishment of what is known as the Mauritian Mines in the Vryheid coal fields and in the Candover Estates already, on behalf of his influential Mauritian associates, has made propositions to the Government which if acted upon would go a long way towards solving the unemployment problem of the country.

This area is eminently suitable for cotton growing and sugar planting and would provide occupation for a very large number of families in a district where healthy residential sites can be secured. In regard to cotton it may be pointed out that at Mogut, the headquarters of the Candover Estate, 1,700 acres are now under cotton and are producing a crop of long staple and excellent quality. The Candover Estates Company is erecting a big ginning plant capable of treating 40 bales per day, and a hydraulic press is also being installed. It is also proposed to extract oil from cotton seed and monkey nuts.

What has been done at Candover by private enterprise in a territory which until recently was a virtual *terra incognita*—and has moreover been carried out practically without any Government assistance whatever—can certainly be achieved on the Ubombo Flats if the Government will but give the scheme here under consideration a proper measure of support and appreciation. Then in regard to sugar it is proposed to establish factories at Hluehlue and further to the north. Mills are available in Mauritius, and if the scheme is carried through the necessary capital would be forthcoming. The crux of the whole position is, of course, the construction of a railway line which will link up this fertile tract with existing railways. If the Government is not prepared to construct such a line as is here referred to, Mr. Rouillard and his Mauritian associates are prepared to provide the capital on terms which are eminently favourable to the State. Construction of the Matubatuba section would cost probably £400,000, and the proposition made by Mr. Rouillard is that this money would be provided on the basis of a subsidy of one mile on either side of the line to the providers of the capital. In this area the Government possesses 1,000 square miles of land, which is ideal for cotton growing and sugar planting but is at present valueless because of lack of transport communications. On this basis, therefore, the promoters of the scheme would secure 80,000 acres, and the balance, which would all be drawn into the scheme of exploitation, would be the property of the country. Moreover, the line could be secured to the State under an expropriation clause and the promoters of the scheme are prepared to guarantee Government rates over such a railway.

It certainly seems detrimental to the country to persevere in a dog-in-the-manger policy in this land of State-owned railways and to forbid private enterprise to build lines which would render a huge area productive, and especially so when the Government is pressed with an urgent unemployment problem and private enterprise is prepared to provide the money required.

Moreover, it may be pointed out that there are precedents for the construction of lines by private capital, the Enyati line and the Messina railway being two cases in point. Here, then, is in our estimate a portion of country lying between the main Natal railway line with its extension to the progressive Vryheid coal fields and the Natal coast with its projected new harbours, which, although it so far has lain fallow, must, by virtue of its geographical position and because of its fertility become a productive and populated area in the near future. And if the Government will take advantage of Mr. Rouillard's liberal offer the settlement scheme can be greatly hastened and the pressing problem of unemployment be materially relieved. Construction of the railway referred to above would afford jobs for quite a large number of the out-of-works. And whilst that work is proceeding one of the richest tracts of country in the whole Union would be progressing towards a scheme of settlement which would provide homes and wholesome work for many hundreds of people who are at present without employment or prospect.

The Iron and Steel Contract.

In the House of Assembly on Tuesday, Mr. Greenacre inquired of the Minister of Railways and Harbours (1) what was the present position of the Pretoria Iron Mines, Ltd., in relation to its agreement of January, 1920, with the Government; (2) whether there was any reasonable prospect of the Pretoria Iron Mines, Ltd., carrying out the terms of the agreement, and (3) if not, whether the Government would exercise its rights under the agreement and take the necessary steps to cancel it, thereby allowing other companies which were now hampered by reason of the existence of this agreement to devel the iron industry? "In terms of the agreement," said Mr. Jagger, "the company is not bound to deliver, nor the Administration to purchase, goods prior to January 1, 1923. A quantity of pig iron has, however, been supplied. No grounds exist at present for the cancellation of the agreement, which so far as I am aware is not responsible for any hampering of development in the iron industry." "We were given to understand the necessary money had been subscribed or guaranteed," observed Sir Abe Bailey

The Week in the Sharemarket.

FIRM PRICES INDICATE INVESTORS' CONFIDENCE—THE QUESTION OF TAXATION.

The position of the Kaffir Market to-day is perhaps the most extraordinary in all its varied history. In spite of the revolution, the market has shown a rising tendency right through the strike and revolutionary movement. The only explanation is that investors, both here and in London, have infinite faith in the Prime Minister of this country and his followers, a faith that has in no way been misplaced. The crushing of the revolutionary movement is the greatest "bull" point the mining industry has experienced since the Rand became an important factor in the world's finance. With the breaking down of this element, millions of tons of hitherto unpayable ore become payable, and in the eventual future this fact becomes the solution of the unemployment question. From a market point of view the speculative rise in non-producers has been somewhat overdone, as the result of the past upheaval cannot be expected to reap instant benefit, but the benefit will be felt in the course of time, and it is in this interim period that fluctuations must be expected and anticipated by the lucky speculator. With regard to the higher grade mines, the question of taxation is a thorn in the flesh, and rumour has it that they may have to bear the brunt of the cost of the disturbances. We will not presume that the Government is going to be so unjust as to burden the shareholders of the richer mines with an over-proportion of their fair share of taxation.

	Mon. 20th.	Tues. 21st.	Wed. 22nd.	Thurs. 23rd.
Anglo-American Corporation	21 4½	21 7½	21 3	20 3*
Apex Mines	—	7 0†	6 3†	—
Bantjes Consolidates	6 6*	6 6*	6 3*	6 4*
Brakpan Mines	43 9*	46 6	45 0*	46 0
British South Africa	11 0*	11 6*	—	—
Bushveld Tins	0 9†	0 9†	0 9†	—
Cinderella Cons.	—	1 9*	2 0*	2 0*
City and Suburbans	2 2*	2 2*	2 2*	2 2*
City Deeps	42 0	41 6*	42 0	41 6*
Clydesdale Collieries	20 0*	—	20 0*	20 0*
Con. Diamonds	15 3	15 0*	14 6	14 3*
Con. Investments	23 0*	23 0*	23 0*	—
Con. Langlaagtes	—	—	14 0*	14 6*
Con. Main Reefs	9 3	9 9	9 6	9 0*
Coronation Collieries	30 0*	30 0*	30 0*	30 0*
Coronation Freeholds	—	0 8*	0 8*	—
Coronation Syndicates		4 0*	4 6	4 3
Crown Diamonds	5 9	5 6*	6 1½	5 9*
Crown Mines	35 6	36 6*	36 0*	35 6b
Daggafontein Mines	2 9	2 7	2 9	2 9
East Rand Coals	1 9*	1 8*	1 9†	1 8*
East Rand Deeps	0 9*		—	-
East Rand Minings	8 6*		10 0*	-
East Rand Props.	5 0a	6 9	6 3*	6 6*
East Rand Debentures	£80*	£80*	£80*	£80*
Eastern Golds	0 6*	0 6*	—	-
Frank Smith Diamonds	4 2†	4 1	4 0	3 11*
Geduld Proprietary	53 9	54 6	54 0	53 0*
Glynn's Lydenburgs	—	8 0*	8 3*	8 0*
Government Areas	79 6a	79 6	79 0	77 9
Hume Pipes	11 0*	11 6*	11 6*	11 6*
Knight Centrals	4 4	4 6	4 6*	4 5*
Lace Proprietary	7 6*	8 3†	8 0*	7 6*
Leeuwpoort Tins	6 11	6 10*	7 0†	7 0†
Lydenburg Farms	4 8*		5 0	4 10*
Middelvleie Estates	1 3*	1 3*	1 3*	1 3*
Modder B.'s	25 6*	—	26 0	25 0*
Modder Deeps	41 9	42 3	41 3*	41 0
Modder Easts	7 9	8 10½	8 4	7 10
Natal Navigation Collieries	28 3*	28 6*	28 6*	28 3*
National Banks			220 0†	220 0a
New Eland Diamonds		25 0*	25 0*	
New Era Cons.	5 9*	6 0	5 9*	5 9*
New Geduld Deeps	1 4*	1 4*	1 4*	1 4*
New Kleinfonteins	5 3*	5 6*	6 3	6 0
New Modderfonteins	68 6	69 6	69 3*	68 0
New Primrose	4 6*	—	4 6*	4 7*
New Unifieds	3 6*	3 9*	3 6*	4 0
New State Areas	27 0	29 0	29 0	29 0
Nigels	5 6*	—	—	—
Nourse Mines	11 0	11 6	11 6	11 7*
Pretoria Cements	41 0	41 0*	41 0	40 6
Princess Estates	1 3†	1 1*	1 0*	1 1*
Rand Collieries		-	0 6†	-
Rand Mines	40 0*		40 0*	40 0*
Rand Nucleus		1 1*	1 0*	1 1*

	Mon. 20th.	Tues. 21st.	Wed. 22nd.	Thurs. 23rd.
Rand Selection Corporations	42 6*	42 6*	—	—
Randfontein Centrals	10 9	10 6*	10 9*	10 6*
Randfontein Estates	16 3	16 6*	16 1½	16 3*
Rouxville Diamonds	1 3*	1 5*	1 5*	1 4*
Roberts Victors		10 6†	9 6*	9 3*
Rooibergs	3 4*	3 4*	3 4*	3 6*
Roodepoort Uniteds	—	—	—	5 0
Simmer and Jacks	3 0b	3 0*	3 1½	3 2b
South African Lands	4 3*	4 3*	4 3	4 3*
Springs Mines	38 6	39 6	39 0	38 0
Sub-Nigels	11 6	11 6	11 6	11 6
Swaziland Tins	9 0†	—		
S.A. Alkali	12 9*	12 9*	12 9*	12 9*
S.A. Townships	8 6*	8 6*	8 9*	8 6*
Transvaal Lands	—	—	—	14 9*
Transvaal G.M. Estates	7 9*	7 9*	8 0*	7 9*
Transvaal Silvers	19 6*	19 0*	19 0*	20 3†
Tudors			0 9†	—
Union 5 per cent.	£102	£102*	£102*	£101¼*
Van Dyks	—	—	—	0 6*
Van Ryn Deeps	62 0	63 0*	62 0*	61 0*
Village Deeps	6 6*	7 3*	—	6 9*
West Springs	7 6*	7 6*	8 0*	8 3
West Rand Consolidateds	2 6†			
Western Rand Estates	3 6	—	3 6*	3 6*
Witbank Collieries	35 0		34 6*	—
Witwatersrands	11 0*	12 0*	12 0*	12 6*
Witwatersrand Deeps	8 0*	8 0*	8 0*	8 0*
Zaaiplaats Tins	2 3*	2 6	2 3*	2 0*

* Buyers. † Sellers. a. Odd lots. b. Ex London.

Electrification Economies.

Commenting on the electrification of a section of the Natal railways, *Beama* says: Important economies will be effected by the introduction of electric locomotives; assuming a loaded traffic of 20,000 tons per day in one direction on a 1 per cent. up grade eleven electric trains, each of about 1,800 tons, would be capable of this duty for which fourteen steam trains would have to be employed. A most valuable feature of electrification in these hilly districts will be the characteristic of regenerative braking on descending grades, obviating all the wear and tear on wheels and brake shoes inevitable with steam traction. This electrification will be one of the most important hitherto undertaken, comparing in this respect with the Chicago, Milwaukee and St. Paul undertaking, the locomotives being designed to take a continuous current supply of energy at a pressure of 3,000 volts on the trolley line. It is a matter of congratulation that the first order placed for this very important contract, amounting to between £750,000 and £1,000,000, has been secured by a British manufacturer, namely, the Metropolitan-Vickers Electrical Company, Ltd., Trafford Park, Manchester, in face of the most strenuous European and American competition.

ASBESTOS

HOBDELL WAY & CO., LTD.

MINORIES, LONDON.

Cables: "HOBNAILS."

Letters to the Editor.

RELIEF OF DISTRESS.

AN APPEAL TO READERS OF THE JOURNAL.

A LETTER FROM THE ADMINISTRATOR.

We have received the following letter from His Honour the Administrator of the Transvaal, Mr. A. G. Robertson:—

To the Editor, S.A. *Mining and Engineering Journal.*

Sir,—At the request of the Right Hon. the Prime Minister I have undertaken the organisation of a fund for the relief of distress on the Witwatersrand caused by the recent disturbances, and I am writing with the object of enlisting the sympathy of the readers of your paper and yourself. It is a matter of common knowledge that distress is prevalent and assistance is needed urgently. It has been suggested that the fund be administered by a committee representing all sections of the people. To this suggestion I have willingly agreed. The times are bad, but when the main question is the granting of relief to women and children, I am sure that the people of this Province will contribute according to their means. Any amounts, however small, will be gratefully received. It is only necessary for me to add that the fund will be so administered as to afford relief in such form as the necessities of individual cases may dictate, without regard to the direct cause of distress. I understand that efforts are being made in various parts to raise funds for the purpose indicated above and I do not for one moment suggest that these efforts should cease. Those responsible for such efforts might, however, consider the advisability of sending the proceeds of their efforts to one central fund and so avoid possible overlapping in giving assistance. If you are able to help, perhaps you will do so by accepting subscriptions on my behalf and by giving as much publicity to the scheme as possible. Subscriptions may be sent to me direct in my office at Pretoria to be credited to the Administrator's (Transvaal) Relief Fund. Help in any direction which may commend itself to you will be appreciated.—Yours, etc.,

A. G. ROBERTSON,
Administrator of Transvaal.

We are only too glad to give prominence to this letter. Funds are urgently needed for the relief of distress, and we would recommend any readers of this journal who wish to subscribe to so deserving a charity to send donations to the office of the Administrator of the Transvaal, Box 383, Pretoria. Should any readers desire to forward any contributions to the Administrator's fund through the office of this journal such donations will be duly forwarded and acknowledged in the columns of the journal. Cheques, etc., should be made payable to the Administrator's (Transvaal) Relief Fund and should be contained in envelopes addressed to—

The Business Manager,
S.A. *Mining and Engineering Journal,*
Box 963, Johannesburg.

TO LET.

MODERATE RENTAL TO APPROVED TENANT.

Cottage, South Coast, Natal. Just completed. Built of concrete. Three rooms; large verandahs; glorious view; 200 yards from sea; safe bathing; 400 yards from railway halt.

Apply, "L,"
Office of this paper.

AN APPRECIATION.

To the Editor, S.A. *Mining and Engineering Journal.*

Sir,—I happen to be a Spiritualist, and in my opinion God, through General Smuts and his police force, saved Johannesburg from the Reds. For there was more than one righteous man in this town, I hope.

Let me repeat that the Main Reef series, which passes through it, represents only a one-thousandth part of the gold contents of this country, in the different auriferous geological ages, which now can be exploited in peace.—Yours, etc.,

SCOTT ALEXANDER,
"Rand Stratigraphist."

Mining Men and Matters.

Mr. W. G. Wickham, H.M. Trade Commissioner, is being welcomed back to the Rand after his visit to England.

* * *

Mr. Alpheus F. Williams has returned to Kimberley after a visit to America in connection with the illness of his father, Mr. Gardner F. Williams.

* * *

Mons. J. Dubois, the mining expert sent by an Anglo-Belgian company to make investigations at Mozambique, where it has intersts, has completed his prospecting, with, it is believed, important results, and returned to Europe.

* * *

Congratulations to Mr. and Mrs. Ralph Stokes on the birth of an heir. Mr. Stokes is Assistant General Manager of the Mining Department of De Beers. He has a magnificent record of war service to his credit and is well known on the Rand.

* * *

Mr. John Ballot, who was so well known on the Rand in its pioneer days, and for many years now associated with the Minerals Seperation Company of New York, was reported in mail week to be in a very critical state of health, leaving little hope of his recovery.

* * *

Amongst employees of the mining industry who met their deaths in action during the revolution were Mr. Dallamore, of the Corner House, who was Secretary of the Navy League in South Africa, and Messrs. T. B. Nourse and W. Stedmen, of the W.N.L.A. They joined the Imperial Light Horse and were killed during the Ellis Park action. Mr. E. Guy, of the General Mining Corporation, also met a soldier's death at Dunswart. The "Mining Journal" extends its deepest sympathy to the relatives of these gentlemen who laid down their lives for South Africa.

* * *

The Council of the University of the Witwatersrand, Johannesburg, has appointed Sir Robert Kotze as the first Vice-Chancellor of the University. Sir Robert, who graduated with distinction in the old University of the Cape of Good Hope from the South African College, has been long connected with the higher education movement in that town, and was for many years Vice-Chairman of the Council of the South African School of Mines and Technology and of the University College, Johannesburg. Sir William Dalrymple has been appointed first chairman of the University Council.

* * *

Mr. G. W. Lowden, one of the murdered officials of the Brakpan Mine, was well known in Barberton and the outside districts. Mr. Lowden was a native of Scotland, and came to South Africa when he was still a young man. He obtained a position as secretary on the estates of Moodies Gold Mining and Exploration Co., Ltd., and went to reside on the property about 1895. He remained in the service of Moodies Company until March, 1914, when he took up farming, which vocation he followed until April, 1915. Mr. Lowden then took up a position on the Leeuwpoort Tin Mines at Warmbaths, where he resided for a number of years, afterwards going to the Brakpan Mines.

TRADE AND INDUSTRIES SECTION.

Week in the Mining Material and Engineering Trades.

OPTIMISTIC FEELING ABROAD—GOOD BUSINESS EXPECTED SHORTLY—IRON AND STEEL—AMERICAN NOTES—TIMBER AND BUILDING MATERIALS—ELECTRICAL GOODS—METAL QUOTATIONS.

General.

Johannesburg this week has been recovering from its shock and taking stock of the general position. After such a tremendous upheaval it will naturally take the community some little time to get back into its stride again. But there can be no doubt of the optimistic tone prevailing in all circles this week and of the wider outlook now being taken generally regarding the future of the Rand. While admitting that the present buoyancy is the measure of our "sturm und drang" period, now happily behind us, there are without doubt solid grounds on which to base justifiable hopes for the future prosperity and expansion of the Witwatersrand gold mining and cognate industries. At any rate, the swing of the pendulum from almost despairing gloom to a feeling of sturdy cheerfulness and optimism has been most marked, and augurs well for the future as soon as things shall have settled down again and we can take our proper bearings. There is no question whatever now, said a very responsible merchant this week, that any change to-day will be for the better. Things are of course going to be very acute for a period ranging porbably from three to six months, and naturally a great deal of unemployment and distress will have to be faced and dealt with. It was essential, he said, for the Government to start right away with the contemplated schemes of railway extension and other relief works in order to absorb as quickly as possible the many men who are now, owing to the economic position, thrown out of employment. He thought it would be at least three months before the mines could be termed to be in full swing again and before they could avail themselves of the men now offering to go back to work. In the nature of things it must be a gradual process, but he was of the opinion that the result of this settlement would be a great expansion of the industry and an era of prosperity such as this country had never before seen. It could not be doubted that the recent Bolshevisk movement had brought about the death-knell of the South African Industrial Federation and its allied executives. The miners, he thought, would in future be very cautious to whom they entrusted their interests—it had been a lesson to the majority of the men which they would not easily forget. In conclusion, he said the recuperating power of this place was so wonderful that it was quite possible that things might recover in a shorter time than he had indicated. Undoubtedly there was a great feeling of optimism abroad, and everyone was bound to settle down to hard graft; public bodies were prepared to put their hands in their pockets to relieve any genuine distress going.

Another prominent commercial man said we were now arriving at a level, so far as prices were concerned, from which we could start to rebuild the gold mining industry—an economic level which spelt prosperity for us now and ahead. He thought that before many months were over the miners would find that their present wages, as regards purchasing power, were better than the pre-strike rates, and that by about June next the mines would be employing more labour than before the strike. An influential importer said that during the next three to four months mining material merchants would have the opportunity of getting to something like normal again. Prices were still coming down and were now lower than they were before the trouble started, and in many cases below replacement values. But this state of things could not go on for ever, and he looked for stiffening prices shortly.

Further, an important merchant said that people were now anxious to get money to meet their engagements. The banks had been lenient during the crisis, but now they would doubtless expect merchants to realise and reduce their commitments. He also was of opinion that in from two to three months more stable conditions would prevail than we have had for a very long time. The present engineering dispute in Britain would, of course, have its effect on the position until settled. He thought that the majority of mining material stocks in Johannesburg were short, which was not surprising under the circumstances, as merchants had preferred to run out of material rather than risk heavy stocks in times such as we have recently had here. No doubt, he said, about June we should see a revival in business generally, but the present time was a very bad one for all, and he could not help thinking that the number of failures in our midst would be a large one. Prices had now reached a very low level, which was of course an advantage to the mining industry, but such deep level prices would not, he thought, be seen again for a long time to come.

Iron and Steel.

With the more settled conditions in front of them, merchants are now preparing to be busy, and are looking forward to gradually improving prospects. The Commercial Exchange this week has been characterised by unwonted firmness, and the general tone has been better—with more inquiries—than members have been accustomed to for some considerable time.

Latest quotations.—Dunswart iron, 18s. per 100 lb. basis price; Union Steel Corporation, Ltd., 22s.; imported iron and steel, flats, small, 25s.; larger sizes, 30s.; ¼ in. and 5-16 in. rounds, iron and steel, 35s.; ⅜ in. iron, 30s.; ½ in. and ⅝ iron, 30s. steel, 30s.; / in. round iron, 30s.; steel, 30s.; ⅞ in. and upwards, imported, round iron and steel, 25s.; channels and joists, 35s. 6d.; shafting, ⅝ in. to 2 in., 6½d.; steel plates, 1-16 in. and ⅛ in., 22s. 6d.; 3-16 in. and upwards, 22s. 6d.; spring steel, 7½d. to 8½d. a lb.; bolts

ASBESTOS
PROPERTIES and FIBRE
ARE PURCHASED BY
AFRICAN ASBESTOS MINING CO., LTD.
P.O. Box 504, BULAWAYO
Telegrams: "Safasco," Bulawayo Phone No. 356
Johannesburg Correspondents:—HUGGINS & CO., LTD.
Consolidated Building —— JOHANNESBURG
Telegrams: "Turbrus" P.O. Box 5105 'Phone 574

and nuts, hexagon, round, [illegible] in., 9d. to 1s.; [illegible] in., 40s. to 45s. per 100 lb.; [illegible] in. and [illegible] in., 40s. to 45s.; hexagon nuts [illegible] in., 9½d.; [illegible] in., 10d.; [illegible] in. and [illegible] in., 7½d. lb.; fish plates, bolts and nuts, ⅝ in., 8d. lb.; ½ in., 6d.; ⅝ in., 5½d.; ¾ in., 5d.; dog spikes, 35s. per 100 lb.; rivets, [illegible] in., 11d.; [illegible] in., 9d.; [illegible] in. and [illegible] in., 37s. 6d. to 40s. per 100 lb.; brass rods, round, ⅜ in., 1s. 5d.; ½ in., 1s. 4d.; ⅝ in. and upwards, 1s. 3d.; brass rods, hexagon, 1d. lb. extra; copper rods, round, ⅜ in., 2s. 4d.; ½ in., 2s. 3d.; ⅝ in. and upwards, 2s. 1d. lb.; tool steel, 3s. 6d. to 3s. 9d. lb.; brass sheets, 1s. 11d. to 2s. 1d. per lb.; copper tubes, solid drawn, ¼ in., 3s. 9d. per lb.; ⅜ in., 2s. 11d. per lb.; 7-16 in., ½ in. and 9-16 in., 2s. 9d. per lb.; ¾ to 1½ in., 2s. 6d. per lb.; 1½ in. to 2 in., 2s. 3d. per lb.; 2½ in. to 3 in., 2s. 6d. per lb.; 3½ in. to 4½ in., 2s. 8d. per lb.; copper rods, ⅜ in., 2s. 5d. per lb.; ½ in., 2s. 4d. per lb.; ⅝ in. to 2½ in., 2s. 2d. per lb.; copper sheets, 2s. 2d. to 2s. 3d. per lb.; fire box copper, 2s. 5d. per lb.; phosphor tin, 3s. 3d.; ingot tin, 2s. 2d.; ingot lead, £28 per ton; drill steel, 6½d.; hollow, 9¾d.; 1¼ in., 9d. to 10½d.; wire nails, 30s. to 35s.; shovels, 52s. 6d. to 55s.; wheelbarrows, 17s. 6d.; picks, 37s. 6d. to 67s. 6d.; pick handles, 21s.; hammer handles, 14 in., 7s. 6d.; 18 in., 9s. 6d.; 24 in., 13s. 6d.; 30 in., 18s. 6d.; 36 in., 35s.; barbed wire, "Shorthorn," 69 lb., 13½ gauge, 22s. per coil; plain galvanised fencing wires, No. 8 gauge, 100 lb. coils, 27s. per coil; No. 10 gauge, 100 lb. coils, 29s. per coil; No. 12 gauge, 100 lb. coils, 32s. per coil; bulb tee fencing standards, 14 lb., 27s. per dozen; 12 lb., 25s. per dozen; black baling wire, 14 gauge, 19s. per coil, 100 lb.; 12 gauge barbed wire, 22s. per coil, 96 lb.; plain wire, No. 8 galvanised, 21s. per coil, 100 lb.; fencing standards, 12 lb., 20s. per dozen; screening, 3s. to 9s. 6d. per sq. yd.; cyanide, 1s. 7½d.; zinc shavings, 1s. per lb.

Second-hand Machinery.

Now that conditions are returning more to normal, companies are setting to work overhauling and making up their lists of requirements. On the Commercial Exchange an important dealer says things are much better and inquiries more numerous. He has a lot of business in hand and anticipates a good turnover very shortly.

The Union Steel Corporation (of S.A.), Ltd.

This company, whose employees after resuming work again left on the calling of the general strike, is now inviting applications from recent employees and others for positions in their works.

Engineering Shops.

Work has restarted and a period of good business is looked forward to. In the opinion of a prominent engineer there will not be many willing workers long out of employment, and that the lower wage level now likely to rule will be accepted by the men without kicking.

AMERICAN NOTES.

Pittsburgh Iron Trade.—The demand for steel products on the whole has shown no change recently, and the tonnage of business booked by steel mills is decidedly short of expectations. Signs are, however, apparent of a more promising character as to tonnage demand in the future, though not as regards prices. Tin plate is doing well, showing a production at close to 75 per cent. of capacity, and sheets, tin products, and tubular goods together average about 50 per cent. of capacity. Bar, plates and shape production is light. Rail production is materially increased. Prices of steel products are extremely unsatisfactory, and there is keen competition everywhere. Pig Iron.—Basic is off 25 c., and foundry iron 50 c. from previous quotations, the market being now quotable at $19.50 for Bessemer, $18 for basic, and $19 for foundry f.o.b.

Iron and Steel.

Latest reports from New York are to the effect that while orders are coming in in considerable numbers, the volume is not impressive, and uncertainty as to the course of prices is not relieved. On the one hand is the expectation of lower freight rates, on the other hand the expected coal strike would mean scarcity and higher prices in coal, coke, pig iron and steel. Operations in steel works in January have shown a range of 40 to 50 per cent. in the Steel Corporation and 25 per cent. to 40 per cent. in the larger independent companies. It is considered a favourable sign that the mills have kept so well up with the prospect that the present pace can be held pending the appearance of the so-called seasonal demand of February-March.

Copper.

There has been no improvement in demand and prices are weakening. Large consumers are not in the market, and buying is easily satisfied at from 13.50c. to 13.75c. Over 200,000,000 pounds of American copper was shipped to Germany during 1921, representing more than 33 per cent. of the outward-bound shipments and cash payments of more than $30,000,000.

Oil Supply of the United States.

The probable and possible oil-bearing regions in the United States are estimated at nine billion barrels of oil recoverable by methods now in use on Januarry, 1922, which, unlike the reserves of coal, iron and copper which are practically inexhaustible, appear adequate to supply the demand for only a limited number of years. The annual production of the country is now about half a billion barrels, the annual consumption well beyond the half billion mark, and is still growing. The estimated reserves are enough to satisfy the present requirements of the United States for only 20 years.

Gasoline production in 1921 was 5,360,014,000, an increase of 9.8 per cent. over 1920

Petroleum Industry.

1921 was the greatest petroleum-producing year in the United States, amounting to 469,639,000 barrels, representing an estimated value at the wells of $753,300,000. This is the greatest quantity ever produced in the United States in any one year, representing an increase of 26,237,000 barrels over the production of 1920, and is more than double the quantity produced in 1912. 1921 closed with Pennsylvania grade at $4 and Oklahoma-Kansas grade at $2 per barrel.

Timber and Building Materials.

With the resumption of operations in the building trade business is expected to improve rapidly. There is a lot of work to be done, much of which has been hung up for lower price levels, and it is stated that a big building programme will be carried out forthwith.

Timber prices: 3 x 9 deals, 1s. to 1s. 1d.; scantlings, 11d.; beaver boards, 4½d. to 4¾d.; floorings, 6½d. to 6¾d.; ceilings, 4½d. to 4¾d.; Oregon, 6s. 6d. to 7s. a cube; pitch pine, 7s. 6d. to 8s.; corrugated iron, 8¼d. Furniture timber: Burmah teak, 17s. 6d. per cube here for first quality, 14s. 6d. for second at the coast; American oak, 1 in., 10½d.; 1½ in., 11d.; 2 in., 11½d., at coast; and Japanese oak, 1 in., 1s. 1d.; 1½ in., 2 in., 1s. 2d., at coast; West African mahogany, 1 in. to 4 in. thick, 26s. 9d. to 27s. 6d. per cube at coast; Rhodesian mahogany, 9s. per cubic foot at mills; Honduras mahogany, 30s. per cubic foot; American yellow pine, 1s. 6d. per foot

J. RAMSAY-ANDERSON, B.Sc., Agriculture, 16 years' practical experience of farming and planting in Africa. 8 years as Advisor and Director of Agriculture, Colonial Governments. Is open to report, advise and value properties; personal supervision; advice given to intending settlers, fees moderate.

14, Palace Buildings, Pritchard Street,
JOHANNESBURG.

of 1 x 12 here: American pine shelving, 10½d. per ft.; 3-ply wood, 3 m.m. up to 5 m.m., alder and birch, 4d. to 6½d. per sq. ft.; oak and teak, 3-ply, 11d. per sq ft. Prices for bricks are about: Mixed, 70s.; wire-cuts, £4 10s. to £5; and £5 for pressed per 1,000, at kilns; white lime, 7s., unslaked, 10s 6d per 180 lb bag; 8 lb bag, 1s., blue lime, 3s. 10d.; blue plaster lime, 4s. 10d.; cement, 11s. 6d. a bag; damp course and roofing, 36s., 54s. to 55s. for 1 to 3 ply

Second-hand Iron and Timber.

Dealers already report better inquiries and are looking forward to improving business shortly. Timber is expected to increase somewhat in price. Second-hand iron is quoted at from 6d. to 7d.; timber at from 8d. to 9d. Dealers are optimistic as to the future.

Electrical Goods.

Business is already improving, said an important dealer; there are more inquiries in town and from outside, and there is a feeling that big things are ahead. At present there are no alterations in prices to record. About June, he said, he expected things would be moving considerably

American Motor Car Production, 1921.

New York advises that it is estimated that the production of cars and trucks in the United States in 1921 was 1,680,000, a decrease of 24 per cent. for the 1920 production; the passenger cars built numbered approximately 1,535,000 and the trucks 145,000. The wholesale value of cars and trucks produced is estimated to be a decrease of 45 per cent. from the 1920 wholesale value.

Railways' Revenual Loss.

It is estimated that the loss on railways since the beginning of the present year cannot fall far short of £500,000.

Metal Quotations.

London, March 20.—Standard copper, £59 12s. 6d. cash, £60 10s. forward; electrolytic copper, £67 5s. cash, £67 15s. forward; standard tin, £143 12s. 6d. cash, £145 7s. 6d. forward; foreign lead, £21 12s. 6d. cash, £21 7s. 6d. forward; quicksilver, £10 17s. 6d.; bar silver, 33⅜d.; bar gold, 94s. 9d. per oz.

FROM A TRANSVAAL COLLIERY.

The following excerpt is from a letter from the manager of a Transvaal Colliery to Mr. Stevenson, representing Messrs. Mavour & Coulson:—"Our coal is harder than the average, and like most other Transvaal coals, is in mass formation, with very little cleavage. This does not tend to the creation of records, but the machine is doing six cuts 20 ft. 0 in. by 6 ft. 0 in. per shift of eight hours, and I am satisfied that it will yet accomplish eight cuts, and possibly more. The Pick-quick Cutter is easily handled both in working and flitting, it is very economical in oil, and practically fool proof in construction. I like the bar arrangement, which we have successfully put to some pretty severe tests. I may say that the economy in explosives which I had estimated we should get by the use of the coal-cutter, has already been achieved, and there is more to come yet. The conversion of unsaleable small into rounds has not been finally ascertained, but roughly the saleable output from the machine faces has gained to the extent of about six per cent. up to the present, it will probably reach ten per cent. yet." Our machine is referred to by the familiar name "Pick-Quick," but when by modification of design, which did not involve departure from any of the essential features of our well-proved machine, we adapted it for service either in room and pillar work or in Longwall work, we re-christened it the "M. & C. Universal." No coal-cutter ever approached the "Pick-Quick" in the variety of service to which it was successfully applied, but the record will be widely extended by the improved machine which is appropriately named the "Universal."

INVESTORS' DIARY: FORTHCOMING MEETINGS.

Meetings will be held in Johannesburg unless otherwise stated:—

March 28.—Buffalo Colliery, Ltd., Bernice Colliery, Ltd., Enyati Colliery, Ltd.; extraordinary general meetings at Port Louis, Mauritius.

May 26.—Modder Deep Levels, 12 noon; Geduld Proprietary Mines, 3 p.m.

June 8.—New Primrose, 11.30 a.m.; New Unified, 11.45 a.m.; Langlaagte Estate, 12 noon; Randfontein Central, 3 p.m.; Randfontein Estates, 3.30 p.m.

June 9.—Consolidated Langlaagte Mines, 10.30 a.m.; Witwatersrand G.M. Co., 10.50 a.m.; New State Areas, 2.40 p.m.; Van Ryn Deep, 3 p.m.; Government Areas, 3.45 p.m.

The annual meeting of the Wit. Deep will be held on March 30.

* * *

Lydenburg Gold Farms.

The annual meeting of Lydenburg Gold Farms, Ltd., is called for May 16. Of the 250,000 shares of 1s. issued it is proposed to pay off 1s. 6d. per share.

Barberton is raising a £17,000 loan at 7 per cent. to instal a municipal electric light and power plant.

The annual general meeting of the Rhodesian Chamber of Mines took place last Wednesday, the 22nd inst.

THE MODDERFONTEIN DEEP LEVELS, LIMITED.

(Registered under the Limited Liability Laws of the Transvaal.)

NOTICE TO SHAREHOLDERS.

NOTICE IS HEREBY GIVEN that the Twenty first Ordinary General Meeting of Shareholders in The Modderfontein Deep Levels, Limited, will be held in the Board Room, Consolidated Building, Fox Street, Johannesburg, on FRIDAY, 26th MAY, 1922, at 12 noon, for the following purposes, namely:

1. To receive and consider the Balance Sheet and Profit and Loss Account, together with the Directors' and Auditors' Reports, for the year ended 31st December, 1921.
2. To confirm the appointment of Messrs. H. V. Rorke and P. M. Anderson as Directors in place of Mr. H. Newhouse, resigned, and the late Mr. M. McCormack respectively; and the subsequent appointment of Mr. P. Strakosch in place of Mr. H. V. Rorke, resigned.
3. To elect two Directors in place of Messrs. E. G. Izod and P. M. Anderson, who retire by rotation in accordance with the provisions of the Company's Articles of Association, but are eligible and offer themselves for re-election.
4. To fix the remuneration of the retiring Auditors, Messrs. Chas. Stuart & F. E. Roberts and Messrs. F. W. Diamond & English, and to appoint Auditors for the ensuing year.
5. To transact any other business that may be transacted at an Ordinary General Meeting.

The Transfer Books and Register of Members of the Company will be closed from the 19th May to the 9th June, 1922, both days inclusive.

By Order of the Board
UNION CORPORATION LIMITED
Secretaries
per J. McFADYEN.

Head Office: 94 Main Street
(P.O. Box 1125), Johannesburg.
24th March, 1922.

SABEN

"SaBeN"

SHEFFIELD

STEELS

FOR ALL MINING AND GENERAL ENGINEERING PURPOSES

MINING STEEL, HOLLOW DRILL STEEL, FORGED SHOES AND DIES, CRUCIBLE STEEL, HEADS, CAMS AND TAPPETS, AIR-HARDENING STEEL, HIGH-SPEED TWIST DRILLS, SHAFTING, MILD STEEL BARS, Etc.

LARGE STOCKS ALWAYS ON HAND

Sole Agents for South Africa.

BARTLE & CO.,

LIMITED.
Loveday House. Box 2466. Phone 3553. Wires: "Faggot."
JOHANNESBURG.
And at KIMBERLEY and DURBAN.

RHODESIAN TEAK & MAHOGANY

FOR MINING & BUILDING PURPOSES, ANT, ROT AND DAMP RESISTING.

Sleepers, Guide Blocks, Deals, Scantlings, Flooring (Machined for Secret Nailing) and all kinds of Purpose-Made Joinery, Fencing Posts, Etc.

PRICES MODERATE.

RHODESIA NATIVE TIMBER CONCESSIONS,
35, PERMANENT BUILDINGS, HARRISON STREET,
JOHANNESBURG.
Box 5530—Phone 3568—Yard: Eloff St. Extension

Robert Heath & Low Moor, Ltd.,

Sole Manufacturers of

LOW MOOR IRON AND RIVETS.

SPECIALITIES:

COLD BLAST PIG IRON
HAULAGE GEARS
PUMPS
WINDING ENGINES
OVERWINDING GEARS
PIT TUBS
COLLIERY PLANT AND BUILDINGS
AXLES AND FORGINGS
DROP STAMPINGS
CHILLED AND GRAIN ROLLS
CASTINGS UP TO 20 TON EACH

SOLE AGENTS IN SOUTH AFRICA FOR PRODUCTS OF LOW MOOR WORKS:

SAMUEL OSBORN
(S.A.), LIMITED,
'Phone 4573 **JOHANNESBURG.** Box 3162

ROBINS SHAKING FEEDERS

¶ For uniformly feeding either sized or unsized materials from bulk to conveying, screening or crushing units.

¶ Feed can be regulated through a wide range of capacity by means of adjustable eccentrics capable of changing the length of stroke, and by a mechanism for varying the inclination of the pan.

¶ Furnished in single and duplex models of the stationary and travelling types, in capacities from 5 to 1,000 T.P.H. and over.

¶ Outstanding Features:
  Simplicity of Mechanism.
  Elimination of drawbacks found in other types of feeders.
  Low operating and maintenance costs.

For full information address:

ROBINS CONVEYORS (S.A.), Ltd.
(Head Office: Robins Conveying Belt Co., New York, U.S.A.)
Engineers, Founders, Machinists
Conveying & Hoisting Machinery
Materials-Handling Installations and Appliances
50, STELLA BLDGS., RISSIK & NEW STREETS
BOX 4736, 'PHONE 4182, JOHANNESBURG

The Week's Meetings.

THE WOLHUTER GOLD MINES, LIMITED.

The annual general meeting of the Wolhuter was held on Thursday, March 23, Mr. A. F. Mullins, the chairman, presided, and said: Although the report and accounts that we have to deal with to-day do not make so good a showing as those of the year before, I think that under all the circumstances we can be satisfied. In the first place, the life of the mine is nearing its end, and it becomes increasingly difficult to obtain ore for the mill; in the second place, as the consulting engineer warned us last year, the average grade of the ore is rapidly falling. In 1919 it was 5.9, in 1920 5.6, and last year only just over 5 dwt. The price of gold fluctuated a good deal during the 12 months, but the realised price per ounce was only 5d. less than during the previous year, viz., 109s. 3d. against 109s. 8d. It is since the end of our year, October 31st last, that the great fall in the price of gold has come.

Turning to the actual figures, 378,600 tons of ore were milled, an increase of 8,400, and the working cost was practically the same, an increase of 1d. per ton being shown. The decrease in the grade meant a fall of 3s. 3d. per ton in the revenue, so that our profit per ton showed a difference of 3s. 4d. less, being 3s. 11d. as against the previous year's figure of 7s. 3d. The working profit for the year was £73,956, a falling off of £61,380. The net profit for the year, details of which can be seen in the working expenditure and revenue account, was £71,768. I might say here that the additional revenue due to the increased price (above standard) realised for the gold was £119,871, so that at standard price of gold our loss would have been a heavy one.

We carried forward from last year a balance of £67,068. Adding to that the net profit for the year as above and the amount received for forfeited dividends, sales of machinery and plant, and for bewaarplaats moneys, we reach a total of £142,582. Out of that we paid £9,299 in taxation, and thus had a balance of £133,283. Two dividends of 3¾ per cent each, absorbing £64,500, were paid, and we carried forward £68,785 to this year's accounts, of which £31,873 was net cash, the remainder being represented by shares, stores, sundry debtors, etc.

ORE RESERVES.

Our ore reserves show a heavy drop, which is due to the small tonnage of payable ore developed for the year, and the elimination of unpayable ore. The areas eliminated include 92,000 tons only slightly below the existing pay limit, and a reduction in cost of working will tend to bring this ore back into the reserve again. Once again the board wishes to impress upon shareholders the fact that the tonnage from the ore reserve must contine to decrease steadily, and that the grade will in consequence probably show a further decline. Every effort will be made to maintain a good tonnage output from other sources, chiefly reclamation work.

Very little development work remains to be done, and almost all of it is now confined to the pyritic lode. From letters which I have received it would appear that many shareholders are afraid that the management it not making the most of the pyritic lode. I can assure them that is not the case. As a mater of fact, it is only from the pyritic lode that we can obtain the ore which enables us to keep our grade at the level it now reaches, and in consequence the search for it is unceasing, and any occurrence of it is promptly developed. Almost invariably payable bodies of it are of small dimensions and very erratic in value.

CHANGED POSITION.

Since the close of the financial year there has been a great change in the position. In November the profit for the month fell to £1,646, and in December it was only £227. The rapid decrease in the price of gold had brought us to bedrock, and the price was still falling. All the mines were seriously affected, and the only course to enable working to continue was to lessen the cost of production. The Chamber of Mines gave notice of the intended reforms, which it considered essential in order to save numerous low-grade mines, amongst which ours was included. Without any attempt to discuss the question, a strike was put into force on 10th January, and continued until 17th March, when it was called off by the unions concerned, the men returning to work on the terms offered by the industry. During that time the essential services were maintained, but milling was only possible for a short while, and a very limited tonnage was treated. The gold won by that milling and also during the first nine days of January has lessened the loss sustained, but the board estimates the mine will suffer a loss of about £16,000 for the first three months of 1922. General mine work was restarted on the 18th March. It is clear that no dividend can be paid for the six months ending 30th April next.

Our native labour force during last year was higher than it has been for some time, but owing to the strike we lost 27 per cent. of it, since time-expired boys gradually left us and all recruiting of new boys was stopped. We are taking steps to fill the vacancies as rapidly as possible, but some time must elapse before we return to our normal number again.

THE OUTLOOK.

I will not attempt to prophesy with regard to the future. When the mine is in full swing we shall see the effect of the reforms now being made, and if we can secure at the same time a full measure of efficiency from our white labour force, which has been sadly lacking in many directions in the past, the Wolhuter Mine may yet do much better than the outlook of the last two or three years has indicated.

And here it is fitting to put on record the board's most cordial appreciation of the work done by the manager and his officials during the strike. In the face of the greatest difficulties, and for an appreciable period in the face of considerable personal danger, they have worked their hardest to keep the mine in good order for the restart, and they have succeeded. Shareholders owe them a debt of gratitude for their loyal and good work.

During the year under review our consulting engineer, Mr. E. R. Clifford, left the country, and Mr. A. J. Brett succeeded him. Mr. Brett has made himself thoroughly acquainted with our property, and his advice is most valuable to us.

Since the end of the year covered by the report the board lost a valued colleague owing to the death of Mr. E. Renaud. The vacany caused has been filled by the appointment of Mr. J. L. Jourdan, whose help and advice we welcome.

The adoption of the report and balance sheet was carried unanimously.

NEW RHODESIAN MINES RECONSTRUCTION.

At the last annual meeting of New Rhodesia Mines, Ltd., the opinion of the directors, as expressed by the chairman, was that the company's position and prospects did not justify the continuance of the business. He, however, invited members present to express their views. This they did, the orator-in-chief being Mr. S. S. Kennedy, who strongly advocated a form of reconstruction, with an assessment. The unanimous feeling of the meeting was in favour of Mr. Kennedy's views, and the board according to promise then made, have since been in conference with him. It is regrettable that the Marquess of Winchester, the former chairman of the company, owing to residence abroad, will no longer preside over the destinies of the company, to which he rendered faithful service through times of exceptional difficulty, and over a long series of years. The scheme submitted by Mr. Kennedy has been adopted by the board. It proposes that a new company shall be formed, to be called New Rhodesia Mines and Exploration Co., with a nominal capital of £120,000 divided into 960,000 shares of 2s. 6d. each, which will take over the assets and undertaking of the present concern. Existing shareholders will receive share for share, credited with 1s. 6d. paid up, leaving a liability of 1s. payable in calls of 3d. at a time. Mr. Kennedy, for a consideration of £1,500, guarantees that if the shares of the new company not accepted by the shareholders do not amount to 200,000 in the aggregate, he will procure responsible subscribers for the deficiency, so that £10,000 shall be available for the new company, apart from the assets of the old co

MANUFACTURERS' AND AGENTS' CARDS

ANDREW, RESTIEAUX & CO.

Manufacturers of Solders, Bearing Metals, Printers' Alloys, and all classes of non-ferrous Ingot Material. Proprietors of the Knoxite Brand of Antifriction Metals.—150, Albert Street, Johannesburg. 'Phone [illegible]. Telegrams "Ardesia."

BARTLE & CO., LTD.

Loveday House, Johannesburg. 'Phone 3553/4. Sole Agents for Sanderson Bros. & Newbould, Limited, Sheffield; F. Reddaway & Co., Ltd., Manchester; Muntz Metal Co., Birmingham; John Shaw, Ltd., Sheffield; J. W. Roberts, Ltd., Leeds; Gimson & Co., Ltd., Leicester; Johnson & Phillips, London; John Davis & Son, Ltd., Derby; McLachlan & Co., Ltd., Darlington; The Cincinnati Bickford Tool Co.; The Lodge & Shipley Machine Tool Co.; The Weston Electric Instrument Co.; Fairbanks Co., London and New York; Edward G. Herbert, Ltd., Manchester; The John Steptoe Co., Cincinnati; Ohio Valley Pulley Works, Maysville; Kearney & Trecker Co., Milwaukee; Sebastian Lathe Co., Cincinnati; Oster Manufacturing Co., Cleveland; and many other well-known British and American Manufacturers.

BRITISH GENERAL ELECTRIC CO., LTD.

Corner Loveday and Anderson Streets, Johannesburg. Electrical Plant and Supplies of all descriptions. 'Phones 4242 4243; Telegrams, "Curren"; Box 2406. Brances at Capetown, Durban, Bulawayo, etc.

CLYDE TRADING CO., LTD.

Howard Building, Main Street. Stores: 51/3, Princes Street, Troyeville. Telegrams: "Clytraco." 'Phone 5964. Box 457, Johannesburg. Sole Agents for Craven and Speeding Bros., Sunderland, Wire Rope Manufacturers. Sole Manufacturers of "Westgarth" Patent Core Wire Ropes, Manilla, Hemp, Coir Rope and Binder Twine Manufacturers; carrying large stocks of Copper and Brass Sheets, Tubes and Rods, Zinc and Muntz Metal Sheets, Shovels, Carbide, Barb Wire, Galvanised Iron, Turpentine, White Lead-in-Oil, Red Lead, Linseed Oils, Paints, Creosote, Disinfectants, Coal Tar, Cotton Waste (White, Grey and Coloured), Wire Nails and Screws, Flexible Galvanised Wire Ropes. Prices on application.

FRASER & CHALMERS (S.A.), LTD.

Engineering and Mining Machinery and Supplies, Farrar Buildings, Simmonds Street, Johannesburg; representing Holman Bros.; T. & W. Smith, Ltd.; Tangyes, Ltd.; G. & J. Weir, Ltd.; and many other British agencies.

HADFIELDS, LTD.

(Representing Hadfields, Ltd., Sheffield). Offices: 46-47, Cullinan Buildings, Johannesburg. 'Phone 5900. Box 1009, Tel. Add.: "Hecla." Stores: Denver, Transvaal. Manufacturers of "Hecla" Steel Forgings for Marine and other Engineering purposes; Steel Castings of every description; Complete Crushing Plants; Screens and Elevators; Mantles; Concaves; Forged Steel Balls; Jaw Faces; Cheek Plates; Spart Parts for Stamper Batteries; Shoes, Dies, Liner Plates, Cams, Heads, Tappets; "Era" Steel Cam Shafts a speciality; "Era" Manganese Trommel Plates, Mining Requisites, Wheels and Axles, Haulage Rollers and Pulleys, Drill Steel, High Speed Tool Steel, Stainless Steel, Alloy Steel, Rails, Points, Crossings, etc., for Railways and Tramways.

ROBERT HUDSON & SONS, LTD.

(Representing Robert Hudson, Ltd., Gildersome Foundry, near Leeds). Offices: Cullinan Buildings, Johannesburg, 'Phone No. 6428/9. Telegraphic Address: "Raletrux." Manufacturers of all classes of Light Railway Material for Mining and Construction use. Rails in all weights per yard. Switches and Crossings, Standard Trucks of various capacities kept in stock.

HUME PIPE CO. (South Africa), LTD

Manufacturers of Reinforced Concrete Pipes for Irrigation, Drainage, Pumping Mains, 3ft., 4ft., 6ft. and 8ft. lengths. Reinforced Concrete Tanks, 2ft. 6in. diameter, 1ft. to 8ft. high. Reinforced Concrete Silos, 15 ft. diameter up to 60 ft. high. P.O. Box 1113, Johannesburg.

MINERALS SEPARATION, LIMITED.

(Incorporated in England.)

This Company has now a direct representation in South Africa. A Flotation Research Laboratory has been opened at Flotation Buildings, President Street, Johannesburg. Samples of South African Ores, etc., can now be accepted for experimental treatment by now world-famed Flotation Processes. All enquiries for South Africa should be addressed Minerals Separation, Ltd., Box 2959, Johannesburg ('Phone 3161). Telegraphic and Cable Add.: "Baldasemos," Johannesburg.

PEARSONS HYCOL, LIMITED.

Manufacturers of Hycol Disinfectant Fluid (*guaranteed* co-efficient 18-20) and "Pacolol" Brand of Lysol. Contractors to Union Government. Works: Hull, Yorkshire. S.A. Head Office: 57, Fox Street, Johannesburg. 'Phone 2472. P.O. Box 1758. Branches: Capetown and Durban. Depots: Port Elizabeth, East London, Queenstown, and Mossel Bay.

PHOENIX FOUNDRY.

Iron and Brass Founders, General Engineers and Blacksmiths. Office and Works: Hay Street, Ophirton. P.O. Box 3031, Johannesburg. 'Phone 1641. Sole Agents for Carntyne Steel Castings Co., Glasgow. Stocks of Tappets, Skip Wheels, Heads, etc. Casting Specialities: Pipe Fittings, White Iron Pump Shares and Tube Mill Liners.

SOUTH AFRICAN LUBRICANTS AND CHEMICAL WORKS, LIMITED.

Head Office, 51 and 52, Club Arcade, Durban. P.O. Box 31. Tel. Add.: "Plumbago." 'Phone 236. Works: Durban, Natal, and Main Reef Road, Denver. P.O. Box 7, Denver. Tel. Add.: "Plumbago," Denver. 'Phone 75, Cleveland. Manufacturers of various A.F. Greases for general use on Gold, Coal and Diamond Mines, etc., and "Trek" Brand Axle Grease.

J. V. STANTON & CO., LTD.

Box 3003. 'Phone 2211, Johannesburg. Representing: Armstrong, Stevens & Son (Drop Forgings, Steel Pressings); Frank Baker & Sons, Ltd. (Castings, Enamelled Signs, etc.); T. E. Bladon & Son, Ltd. (Blow Lamps, etc.); Eadie Bros. & Co., Ltd. (Twist Drills); Fleming, Birkby & Goodall, Ltd. (Tramway Material); Goodell-Pratt Co. (Engineers' Tools); Diamond State Fibre Co.; Hamilton-Beach Mfg. Co., Ltd. (Elec. Apparatus); John Morrow Screw & Nut Co., Ltd.; W. Ottway & Co., Ltd. (Theodolites, Levels, etc.); Rapid Magnetting M/c. Co., Ltd. (Ore Separation); Super-Vice (Hoddesdon). Ltd. (Vices); Twiss Electric Transmission Ltd.; Thos Wales & Sons, Ltd. (Joiners' Tools); Wearden & Guylee (Drill Chucks); Henry Wiggin & Co., Ltd. (Resistance Material).

E. W. TARRY & CO., LTD., Austral Iron Works.

Corner of Anderson and End Streets. Box 1098. 'Phones 149 and 626, Johannesburg. Iron and Brass Founders and General Engineers. Machine Cut Gears in Raw Hide and any Metal a speciality, **and in Cast Iron up to 18 feet diameter.** Sole Manufacturers and Agents for Tregaskis Patent Drill Heating Furnace.

TRANSVAAL GRAPHITE COMPANY.

Foundry Plumbago, Flake Graphite, Pipe Jointing, "Murella" Boiler Composition, Graphite Pigment, Electrical Graphite, etc. Offices and Works: 234, Anderson Street, Johannesburg. 'Phone 2560.

WADE & DORMAN, LTD.

Box 2997; Telephone 1460, Johannesburg. Structural Steel Work of all kinds. Large Stocks of Joists, Channels, Angles, Tees, Plates, Chequered Plates, etc. Agents for British Steel Piling Co. Stockyard and Works: 217, Main Street.

New Ideas on Underground Lay Outs.

The South African
Mining & Engineering Journal
THE ONLY WEEKLY MINING PAPER IN THE CONTINENT OF AFRICA.
Established 1891.

Vol. XXXII., Part II JOHANNESBURG, TRANSVAAL, SATURDAY, APRIL 1, 1922 No. 1592

Elected a Vice-President of the Chamber—Mr. P. M. Anderson.

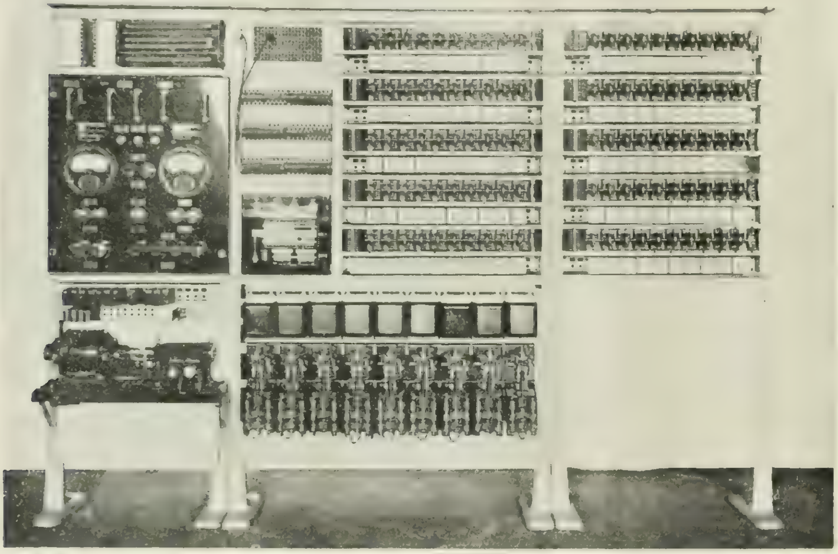
At Monday's annual meeting of the Transvaal Chamber of Mines, Mr. P. M. Anderson, Chairman of the Union Corporation Group of Companies, was elected a Vice-President of the Chamber. We have recently published photographs of Mr. Buckle, the President, and of Sir Evelyn Wallers, who has been re-elected as a Vice-President, and in now giving Mr. Anderson's photo we desire to congratulate him on the high office to which he has been elected, and at the same time to congratulate the Chamber of Mines on having secured Mr. Anderson as one of its Vice-Presidents. Mr. Anderson's large technical experience and administrative ability should be of inestimable value to the industry.

SIEMENS BROTHERS

AUTOMATIC TELEPHONES

In addition to a number of
PUBLIC EXCHANGES FOR LARGE TOWNS
we have supplied scores of
PRIVATE AUTOMATIC EXCHANGES

Our EXPERIENCE is wide—Our SATISFIED CUSTOMERS numerous



PRIVATE AUTOMATIC EXCHANGE BOARD 100 Working Lines

CHEAP TO MAINTAIN—SIMPLE TO WORK

IMMEDIATE DELIVERY FROM LOCAL STOCK

Representatives in South Africa:

A. J. G SIMPSON, A.M.I.E.E.
African Life Buildings, 85, St. George's St.,
CAPE TOWN.
P.O. Box 239 Cape Town. Telephone 1202 Central.

G. H. B. BERNARD, A.M.I.E.E.
9-10, Cotts Buildings, Rissik and Fox Sts.
JOHANNESBURG.
P.O. Box 7404 JOHANNESBURG. Telephone 408 Central.

Telegrams: "SIEMENS"

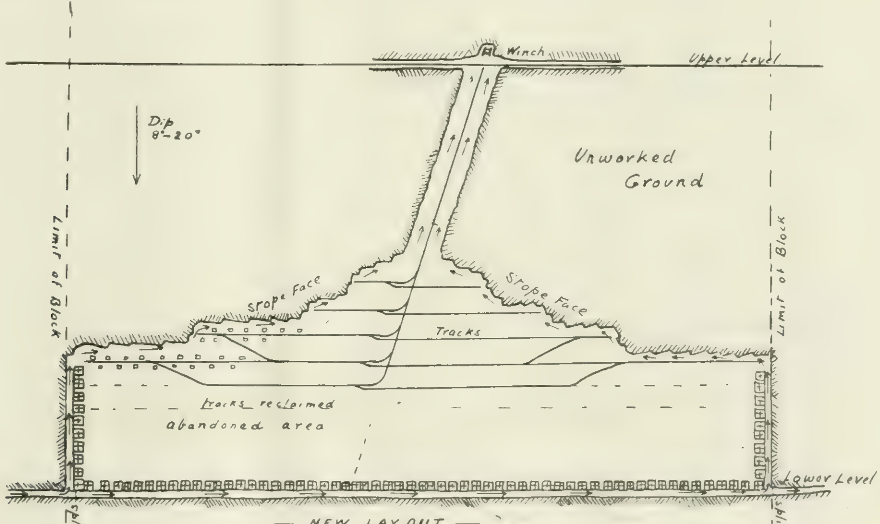
A New Standard Stope Lay-Out for Flat Reefs.

OLD AND NEW METHODS CONTRASTED— VENTILATION AND SUPPORT OF WORKINGS.

(By R. E. Sawyer, A.R.S.M.)

In the following article the author describes a method by which it is claimed that at least 20s. per fathom can be saved on some of our big Far Eastern mines. Mr. Sawyer describes his method in close detail, and the two diagrams accompanying this valuable article will assist readers to appreciate the technicalities of this new lay-out scheme.

Some time ago the author, having been called on to lay out the stoping for a new mine, visited most of the Far Eastern mines to ascertain the current practice. The most notable feature was the difference in practice and system, and the lack of any definitely satisfactory method. The old standard method of stoping parallel with the winze and running out tracks every 30 feet is most unsatisfactory and accounts largely for the low efficiency of the mines where it is practised. The footwall crosscut system is much better, but it is at present only applied where large blocks of known value are available. The new lay-out here described applies equally to the footwall crosscut system in so far as the shape of the stope face is concerned, which is its main feature. In the author's opinion, the combination of this lay-out with the footwall crosscut makes the latter system preferable in all cases where 50 per cent. of the block is worth stoping at all, especially if the values are in the lower half of the block.



— NEW LAY OUT —

Description of the Old Standard Lay-out.

Consider a block 1,000 feet by 600 feet. A winze is put down connecting the two levels, which are approximately 600 feet apart. Six inches or so of shale are carried below the contact. The winze is near the centre of the block, and is usually put down on the true dip, but occasionally it is as much as 15 degrees away from this. Where it is on the true dip the angle to be turned through by the track coming from the winze into the stope is slightly under 90 degrees. This is usually done by a curve of 20 to 30 feet radius. To pull cars round this curve with a winch rope requires heavy guard rails on both sides of the inner rail and posts every six feet on the inside of the curve or centre rollers to keep the rope in position. This may be described as the "brute force" method. The cars will certainly travel round the curve, but the wear and tear on guard rails, wheels and ropes is very heavy and requires a small army of truck-busters, fitters, riggers and timbermen for upkeep. The initial cost of installing one of these curves is well over £100. In a stope of 600 feet backs at least 37 curves are required, and switches are butt to butt, there being only 15 feet between frogs. Each track only serves 30 feet of stope face, and has to be constantly advanced in short lengths to keep near the face. The stope is opened out by taking a strip, say, 40 feet wide off each side of the winze, and the faces are then pushed outwards, travelling parallel with the winze, until the limits of the blocks are reached. Assuming the block extends 500 feet on the strike on each side of the winze, by the time the block is completed it will be equipped with 19,000 feet of 30lb. track, 2ft. 6in. gauge, costing in rails alone approximately £4,720; 37 switches, costing £440; and 37 curves at £100 each, making a total of £8,860 for track only. In the case of a winze not on the true dip, the curves going off on one side are easier, whilst those on the other side are much worse, if not impossible. This can be overcome by crossing over the winze from the acute-angle side and handling the rock from both tracks on the one switch. This method was suggested by Mr. Stuart Martin, and is embodied in the new standard. Two other grave objections to the old system must be considered.

1. Support of Workings.

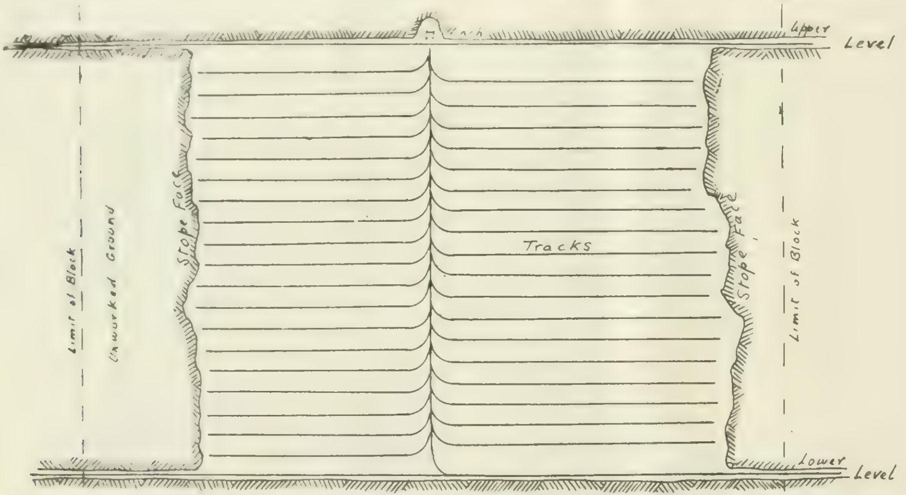
During the life of the block the whole of the tracks have to be kept clear and an attempt made to keep up the hanging wall over the entire area. As larger areas get stoped out this is found to be impossible, as the hanging wall will settle whatever method of support is adopted, and when the stope width is narrow the hanging has to be cut away to allow the trucks to pass, thus breaking the hanging and making matters worse. This difficulty will become more and more evident in the future.

2. Ventilation.

With so many tramming ways that have to be kept open, it is impossible to confine the air current to the face of the stope where it is required. The Government Mining Engineer has already called attention to this, and it is a factor that, by itself, is sufficient to condemn the old method. The air current must be confined to a comparatively small area, as once it is diffused throughout the whole stope it is impossible to maintain any velocity and the air remains relatively unchanged from shift to shift, accumulating gas and dust to a dangerous extent.

Description of New Standard Method.

The winze is put down at a small angle, say 20 to 25 degrees, with the true dip. At least two feet of shale must be carried below the contact, where the stope width is less than five feet. This is important, as it greatly facilitates the lay-out of the curves for stope tracks. The stope is opened out: (1) by taking off a strip 25 feet wide on either side of the winze by hammers to avoid smashing up the track and to economise by making use of the hammer boys, who are under agreement to lash for two hours daily, to load direct into the main track from a distance of up to 25 to 30 feet. (2) By taking off a 40 feet strip above the bottom drive and laying a track in the stope 30 feet above the drive track. The switch to winze track is taken off on the obtuse angle side. The track from the other side crosses over the winze track by means of a short length of rail which is easily removed by one boy, and joins the other track by an ordinary switch on the flat. As soon as the stripping above the drive has advanced, say, 100 feet, another strip 30 feet wide is started off on either side of the winze, and so on, the stope faces then advance in echelon—*i.e.*, diagonally across the block—switches being taken off every 30 feet to one side only. In practice it is found that for the first three slices—*i.e.*, 100 feet up the stope—the rock, approximately 40,000 tons, is handled down to the lower level by means of diagonal tracks, connecting the stope tracks, in a very economical way, no power being required. It is possible to lower all rock to the bottom level, but this entails keeping the main winze open for the life of the block—frequently a costly business. The whole secret of putting in a correct pull-out from the stope to the main track is to have the curved part on the flat where the tramming is by hand, and to have a straight pull-out to the switch for the winch rope. This can only be done where the main track is well down in the shale, two feet at least, and where the angle of the stope track to winze is more than 100 degrees. If these conditions are fulfilled, guard rails, side timbers and centre rollers are then unnecessary. On the one mine where this is realised and practised it is stated that guard rails are only an excuse for bad track-laying. It is generally found that the first two or three strips advance quicker than the later ones, as it is easier to strip off the drive than to open out from the winze, consequently more rock has to be handled on these two or three tracks. To do this they are connected by short inclined stretches of track, down which full cars are spragged, the lower track serving as a return way for the upper. This greatly facilitates tramming. As soon as the bottom tracks have worked out to the end of the block and no longer serve as return tracks, they are pulled up and used further up the stope, so that no more than five or six switches to main track are in use at one time. By thus concentrating tramming more efficient supervision is possible and a great deal of unnecessary running up and down the stope is avoided. Instead of the cars having to run over anything up to 38 switches, with consequent chances of derailment, only four switches are crossed in the new method. Sidings or loops are put in, where necessary, on the flat to facilitate tramming. In the event of a track being blasted, work is concentrated on other tracks until it is repaired. Before removing a track all the footwall in its vicinity is brushed and washed down to recover fines. That portion of the stope is now abandoned and the hanging wall allowed to settle down on to the packs to any extent without interfering with the current work of the stope. It is evident that by advancing the faces in echelon much better benches can be carried than in a straight up-and-down face. The air and water pipe lines are shortened and simplified under this system. Each track serves approximately 100 feet parallel to itself and 30 feet at right angles, instead of only 30 feet at its extreme end, as in the old method. It has been suggested that the track parallel with the face would be constantly blasted. This is not the case if the track is properly put in—that is, the top rail should be at least three inches below the footwall. The waste packer keeps a few hammer boys who put in pop holes in the shale in advance of the track, so that the tracklayer has no trouble in getting his track well down. In addition to this, the trammer always leaves a few carloads of rock above the track as an



— OLD LAY-OUT. —

additional protection from blasting. The cost of track by this method is less than one-seventh of the old. Thus 3,000 feet of track cost £750; ten switches, £120; five curves at £10 each. Total £920, as against £8,860, or a saving of nearly 10s. per fathom over the block. There is small chance of any of the track being unrecoverable, whilst by the old method long lengths are often lost under fallen hanging.

Ventilation and Support of Workings under the New Method.

These are dealt with together, as systematic support is put in in such a way as to help ventilation. As soon as the bottom of the stope is far enough away from the lower level a row of "Maltese cross" packs are put in—that is, a 20ft. square pack—the corners being made of pigstyes and the rest filled with stone walling. These are put in 10 feet apart and the space left is stonewalled on the side above the drive. To make a tight job the whole face of the packs can be sprayed with a cement gun. This row of packs is also necessary to keep the level open, as the hanging wall will probably come down in the abandoned area above. The same method is followed up the sides of the block, keeping the airways open. The saving in timber and stone walling is very great, as no attempt should be made to support permanently the main worked-out area, only sufficient pigstyes being put in to render the workings safe. Extra pressure is undoubtedly felt at the face, but this gives increase in breaking efficiency. This system is really a modified longwall, and has all its advantages, the principal being to work homewards and let the roof behind you look after itself. The support of hanging on the Far East Rand will call for more attention as time goes on. Sand filling may be ruled out as impracticable on flat reefs. Although in many cases the reef is narrow, at least 48in. stope width must be carried to allow of blasting and tramming facilities. Sorting in stopes is and can only be done to a limited extent. The system described lends itself admirably to a scheme whereby all waste rock that is not sorted in the stope is sorted out at a central station underground. It could then be re-loaded into empty trucks returning to stopes and packed systematically. The waste rock would be delivered to those stopes, which, owing to a big reef width, have no packing material available. This, however, would entail the use of a specially low side-tipping truck, such as is used in the stopes of the State Mines. By putting three machines on each side an efficiency of 2.6 fathoms per machine shift can easily be obtained, owing to (1) facility for cleaning out rock; (2) increased breaking efficiency; (3) safer working and less stoppage owing to falls of rock on tramming ways; and (4) better benches. At this rate the block will be finished in under 32 months, the last period being as safe as the first. Under the old method, with the low efficiency of under one fathom per machine shift which obtains on some of the mines where it is practised, the block will last over eight years. The state of the hanging wall during the later years over the centre area of the stope which still has to be kept up can be better imagined than described. The adaptation of this method to the footwall crosscut is simplicity itself. The tracks are put in 30 feet apart, and each boxhole serves three tracks. No switches or curves are necessary. A low side-tipping car running on light rails of narrow gauge is used. The objection to the footwall crosscut that it was difficult to keep up the hanging wall over the boxholes for a long period, and that the loss of a boxhole was a very serious matter, is by this method largely overcome, as only two boxholes are in use at a time, the lower boxholes being abandoned as that portion of the stope is worked out. The main advantages of the new system are: (1) Great saving in tracks and pipes; (2) less cost of installation and upkeep; (3) more efficient tramming; (4) safer working and low cost of supporting hanging wall; (5) higher machinery efficiency; and (6) systematic ventilation of the face is made easy.

In conclusion, the author claims no single item as new or original, but hopes that this combination of methods, described above as the new standard lay-out, will help to lower costs on some mines considerably.

Union's Copper Mines.

In the House of Assembly on Monday, on the third reading of the Railways and Harbours Partial Appropriation Bill, Mr. Burch (Uitenhage) made a strong plea on behalf of the Messina Copper Company in respect of the large amount of copper required in the electrification of the railways. He said there was a large quantity of copper in the hands of financiers in America and the United States available at a price below the actual cost of production, and he urged that the Government should see if it was not possible to place business with the Messina Company with a view to keeping the money in the country. He pointed out that owing to the colour bar the cost of production at Messina was much increased, and urged that in view of this the industry should have some protection. The mine had been obliged to close down last year, but the expenditure of £150,000 as the result of the railways electrification contract would be a great benefit to the Northern Transvaal.

Mr. Mostert (Namaqualand) raised the question of the closing of the copper mines in Namaqualand, accusing the Government of subservience to the interests of the big trusts which were concerned. He maintained that there was copper enough in the Cape and that it could be produced as cheaply as anywhere.

The Minister of Railways, replying to Mr. Burch, said that the Government could go no further than it was bound to do under the Act of Union, namely, to operate the railways on business lines, and he could not therefore accept the principle that the railways should pay more for copper than the current market price. It was no use trying to make a mining company like the Namaqualand Company mine work at a loss; it was better to allow them to conserve their assets until conditions allowed them to resume operations. He knew nothing of the allegation made by Mr. Mostert as to the Cape Copper Company having threatened the Government.

TRANSVAAL SILVER AND BASE METALS, LTD.

Output for February.

191 long tons of lead bullion, containing 19,673 ounces fine silver. This bullion was produced by the small furnace only, as the large furnace is not yet in commission.

TRANSVAAL G.M. ESTATES.

The following cable has been despatched to London:—"Working profit for the half-year being less than 1 per cent. on isued capital, directors regret unable to declare a dividend per 31st March."

MINES DEPT. EXAMS.
CERTIFICATES AWARDED INSTITUTE.

MANAGERS' EXAMS., September, 1921, January, 1922.

We obtained 15 out of a total 22 certificates awarded in South Africa

	Metal	Coal	Totals
Ours	9	6	15
Rest of S A.	4	3	7
		Total for S.A.	22

OVERSEERS' CERTIFICATES (Metal).

So far as we know we have only had 6 failures during 1921, and secured two thirds of the certificates issued in S A during the past twe years.

TUITION (Metal or Coal) by class, correspondence or privately

Mining Institute (Prof. Yates),
St. James' Mansions, Eloff St. Johannesburg

RYLANDS' STEEL WIRE ROPES

MANUFACTURED BY:
RYLANDS BROTHERS, LTD.,
WARRINGTON, ENGLAND.

SOLE REPRESENTATIVES FOR UNION OF SOUTH AFRICA:—
ARMSTRONGS & MAIN, LTD.,
84, Marshall Street,
JOHANNESBURG.
P.O. BOX 5988. 'PHONE 5203.

LARGE STOCKS ON HAND.

SPECIALISTS ..

IN THE MANUFACTURE AND DESIGN OF

STRUCTURAL STEELWORK.

ARMSTRONGS & MAIN, LTD.,
GENERAL AND CONSTRUCTIONAL
.. ENGINEERS, ..
84, Marshall Street,
JOHANNESBURG.

P.O. BOX 5988. TELEPHONE 5203.

Chamber of Mines Annual Meeting.

PRESIDENT'S ADDRESS—IMPORTANT PRONOUNCEMENTS.

In an important review of the experiences of the last few weeks, the President of the Chamber of Mines (Mr. H. O. Buckle), at Monday's meeting of the Chamber, made it clear that the S.A. Industrial Federation would no longer be recognised by the Chamber. He explained under what conditions the industry was prepared to continue recognition of the unions. He also gave an interesting epitome of the Chamber's transactions during the year and some valuable statistical information respecting the gold and coal mines.

Mr. Buckle said: By far the most important matter affecting the industry during the past year is the recent protracted strike, and the attempt at revolution by which it was followed. The Rand has had its full share of this kind of trouble during the past generation; but I do not think that I am exaggerating when I say that it has never gone through a more dangerous experience than during the last few weeks. As the Prime Minister pointed out in his speech in the House of Assembly last Monday, there was for some days imminent danger that the whole Rand would fall, as the greater part of it had already fallen, into the power of the revolutionists—in which event it is unlikely that you would have been assembled in this hall to-day.

I am not going to weary you by recapitulating the history of the strike, with which you are already well acquainted. Nor am I going to attempt to show to what extent the strike and the revolution were intermingled or how far the ostensible leaders of the one were the secret and open instigators of the other. That some were playing this double part it is quite clear; but who these were and the precise degree of their responsibility is a matter which must be left to the criminal courts to resolve.

I should like to point out, however, that the events of March 7th to 17th showed clearly that the attempt at revolution was not a spontaneous and unplanned outbreak, but that it must have been deliberately plotted for many months beforehand, probably with a view to taking advantage of any industrial disturbance that might arise; and it can hardly be doubted, in view of the unnecessary way in which the strike was promoted and pushed forward by the S.A.I.F., that this action must have been stimulated by those anxious to create a revolution.

The New Chamber of Mines Building.

The Promise of Protection.

No good purpose can now be served by calling attention to the mistakes which some of us think were committed in dealing with the difficult situation which arose after the re-opening of the mines. I wish, however, in justice to the Chamber, to place on record that, as soon as it became evident that a campaign of violence and intimidation was being undertaken, the Chamber immediately and repeatedly used every means in its power to press on the Government the urgency of taking prompter and stronger steps to redeem the Prime Minister's promise of protection to all who returned to work. Nothing that we could do in that direction was left undone.

It is a comfort to be able to turn to the brighter side of these terrible events. Directly it became clear that we [illegible] ordinary industrial dispute, an [illegible] with an attempt to [illegible] the community, all the [illegible] elements of the population and I am glad to say that those [illegible] to comprise the large majority—rallied instantly to the cause of law and order. We, in common with the rest of the community, are deeply indebted to those who, at no matter what risk, [illegible] to uphold the power of civilised government. Amongst these the police had by far the longest and most difficult task. Their duties during the period before Martial Law was proclaimed, when, fettered by the absence of any adequate authority, they had to do their best to restrain turbulent mobs which appeared or dispersed without warning, were to the last degree exhausting and exasperating; and their patience and perseverance under such conditions calls for our utmost admiration and gratitude. With them we must associate in our thanks the various units of the defence and burgher forces who came so promptly at the call, the special constables, the civic guard, and those members of the scientific and [illegible] to whose efforts at the power station it is due that Johannesburg did not have darkness added to the other horrors of the situation.

Deep Indebtedness.

To all these, we, as a portion of the population of the Reef, are deeply indebted. But there are other classes to whom the industry as such owes special thanks. The mine officials as a class have shown wonderful determination and loyalty throughout the whole period of the strike. They have undertaken [illegible] and in many cases toilsome labour under the most difficult conditions, nearly always at considerable personal risk. Some of them, I regret to say, have lost their lives, as in the case of the terrible tragedy at Brakpan; others have been seriously mishandled; and many of them have had to face that greatest of moral trials, the disapproval of their action by their relatives and intimate associates. We desire to express our appreciation of their efforts in the most unqualified manner.

I should like to add a special word in respect of the work of the compound managers. The handling of great numbers of natives under conditions alien to their upbringing is never easy. Under the circumstances of the last few weeks it has been extremely difficult and at times dangerous. There was a deliberate attempt on the part of certain sections of the white population to provoke the natives into an aggressive attitude. That provocation stopped at nothing, not even at cold-blooded murder. It is not to be wondered at that the natives became first frightened, and then angry and indignant. That they did not translate their feelings into violent action is due almost entirely to the extraordinary personal influence over them possessed by their compound managers. You can all judge what might have been the condition of these fields had a native outbreak been added to our other troubles; and you will, I am sure, desire to register a special expression of your gratitude to the men to whom it is due that we were spared this.

I wish also to record our sympathy with those who were injured in the disturbances and with the relatives and friends of those who lost their lives, amongst whom were, I regret to say, two members of the staff of the W.N.L.A., Messrs. Stedman and Nourse, killed fighting with the I.L.H. at Ellis Park.

Modified Industrial Relations.

The recent upheaval has necessarily modified the relations between the Chamber and the various associations of employees. Previous agreements have, of course, ceased to exist, but the Chamber has undertaken that it will continue for the present the arrangements as to hours and basic wages which obtained before the strike.

The system of shop and shaft stewards and works and grievances committees which prevailed before the strike has proved unsatisfactory. One of the main objects underlying the establishment of works committees is to bring about more co-operation between the management and their employees, and the system works well in some industries in other parts of the world with a long industrial tradition behind them. On the Rand, unfortunately—no doubt because of the industrial inexperience of many of the workers, who have no such traditions to steady them—those committees degenerated largely into committees for the manufacture of grievances. Similarly, the system of shop stewards and shaft stewards (which grew out of the shop steward system in vogue with mechanics) became on the Rand, and more particularly as far as the underground employees were concerned, a veritable nuisance, undermining discipline and indeed constituting a secondary management at the mines.

Defiance by Shaft Stewards.

Shaft stewards actually went so far as to issue instructions to the employees in regard to their work, and in some glaring instances held up whole shafts in defiance of the agreements between the Chamber and the union. In the present state of industrial education amongst mine employees these arrangements have proved an entirely premature addition to the mining industrial fabric, giving excuse for that constant interference in the function of management which has led to so much irritation and inefficiency, and the Chamber will no longer be a party to them. Every facility will, however, be given by managers to their employees to approach them with their grievances; if necessary, a stated time each day will be set aside for that purpose.

I wish to make it clear that the industry does not intend to go back on its policy of recognition of trade unions. It is true that, in consequence of the action of the South African Industrial Federation, that body will no longer be recognised, but so far as the unions are concerned the industry is prepared to continue recognition on the following conditions:—

1. A union, to be recognised, must contain in its membership a substantial proportion of the particular class of mine employee which it purports to represent.
2. Workmen's unions will not be recognised as representing officials. It is a condition of all new appointments to official positions that the holders will not remain, nor become, members of workmen's unions.
3. A union to be recognised must contain in its constitution proper provision for a secret ballot of its members before a strike can be declared.
4. The industry will not recognise any union whose members refuse to work with non-members or which countenances a strike in order to force employees to join it.
5. So long as a substantial section of a particular class of mine employees is outside a particular union the Chamber will not look upon the latter as speaking for the whole of the employees in that class. It therefore follows that the Chamber will consider on its merits any point put up by a union, and decide whether or not it will deal with that union on that particular point.
6. The industry will not recognise as representatives of unions, for any purpose whatever, persons who have been associated with the "Augmented Executive" of the South African Industrial Federation or with the "Council of Action."
7. The industry will not necessarily recognise as a trade union every organisation which calls itself a trade union. It has occurred before now that organisations whose objects are really political have attempted to disguise themselves as trade unions, and the Chamber does not undertake to recognise any such body.

Chamber Will Meet Unions.

I think it will be generally admitted that these conditions are reasonable. Subject to them, the industry is prepared to continue its recognition of trade unions. It may be that some unions will find it necessary to modify their constitutions to fall into line with Clause 3 of these conditions. Such a modification may take some time to effect, and during that interval some important matters arising out of the past strike may come up to be dealt with. In order to prevent any charge of unfairness on that score, the Chamber is prepared in the meantime to meet the accredited representatives of any of the mining unions to discuss any competent matter arising out of the strike without insisting on the prior acceptance of Clause 3, but subject to the other conditions.

To turn to the events of the past year, there have been various other strikes, important enough in themselves, though of little consequence compared with the recent upheaval; but I hardly think it necessary to refer to them in any detail, as they have been dealt with at the quarterly meetings of the Chamber.

Legislation Affecting the Industry.

Only two Acts directly affecting the industry were placed upon the Statute Book during the session of 1921. The Financial Relations Acts Further Extension Act has withdrawn from Provincial Councils the power to impose further taxation on mines, and the existing legislation on the point terminates at the end of the current month. The Native Advances Regulation Act conferred powers, which have since been put into effect by regulation, to restrict the amount of money to be advanced to natives recruited for other industries in the same manner as such advances by the mines have been restricted for some years past. It is as gratifying as it is unusual to be able to point out that the year's legislation is in favour of the industry, if only in comparatively small matters, since it has for a good many sessions been necessary to put the reverse position on record.

I regret that the forecast of the current session does not appear to be equally favourable. Last year I mentioned that the subject of miners' phthisis was receiving the consideration of a Commission, whose report has now been published, together with a draft Miners' Phthisis Bill. I regret that, so far from the industry receiving relief from the enormous burden created by the present Miners' Phthisis Act, the Commission has thought fit to recommend a further extension of benefits under the draft Bill which it is estimated will involve an increased liability of approximately £3,000,000 upon the scheduled mines by way of compensation.

Miners' Phthisis.

The history of legislation for miners' phthisis of recent years affords an extraordinary illustration of the lengths to which the Legislature has gone in providing compensation for the sufferers from this occupational disease. In no other country have benefits been granted for industrial diseases or accidents on such an unprecedented scale and on such lavish lines. If similar legislation had been enacted in connection with other industries in this country, the position would at least have been uniform and logical; but as it is, the Legislature cannot possibly avoid the obvious criticism of having imposed purely sectional legislation upon the gold mining industry. The principle of saddling the present and newer mines with an enormous retrospective liability for miners' phthisis created on the older mines, many of which have ceased to exist without contributing their share to meet this liability, is both morally and logically indefensible. The unfairness of the position is further exemplified when one realises that the retrospective liability created is in the nature of life annuities to old beneficiaries and their dependants, and that this liability will continue over an almost indefinite period. The Chamber has on several occasions represented, so far unheeded, that the liability created by the present Act was far in excess of the liability contemplated by the Legislature when the Act was passed. Recent reports, however, show that the Chamber's previous estimates were based on conservative lines, and that the liability is even greater than was supposed. Figures which have lately been submitted to the Chamber show that the present mines will, if the draft Bill is passed, have to provide the prodigious sum of about £12,000,000 to meet claims under the Phthisis Acts.

I need not refer to the particular sections of the present Act creating this enormous liability, but I may point out that the liability for annuities under the present Act will involve an amount of about £6,000,000. Over and above this liability the draft Bill would extend the granting of annuities or life pensions to the dependants of prior law beneficiaries, thereby involving a further liability of £2,500,000. I trust that the question of granting indefinite annuities to the dependants of miners, who, unlike the beneficiary miner, enjoys a normal expectation of life, will receive the careful and serious consideration of the Legislature before it contemplates imposing yet further burdens on the industry.

A Protest.

Before passing from the subject of miners' phthisis I desire to protest against the inclusion of compensation for pure tuberculosis under the Act, and the continuance of providing compensation for this non-occupational disease. It is clear from a recent report of the Chairman of the Medical Bureau, and the findings of the Miners' Phthisis Commission, that employment in the gold mines at the present time does not specifically increase liability to the contraction of ordinary pulmonary tuberculosis, so that there can be no possible jusification for continuing to regard this as an occupational disease and to provide compensation therefor under the Act, unless it is superimposed upon silicosis.

I further desire to protest against the scheduled mines being called upon to provide further funds for the settlement of beneficiaries on the land or in other industries. The mines have already provided £100,000 for this purpose, and have also adopted a sympathetic attitude with regard to the re-employment of beneficiaries in surface occupations. The principle of calling upon the mines to contribute to the settlement of the beneficiary as well as to provide him with monetary compensation is wholly unfair and inequitable.

Phthisis Medical Bureau.

The report of the Chairman of the Medical Bureau for the year ended July 31st, 1920, was doubtless read by members with considerable interest. It was more than useful in that it recapitulated in tabular form the numerical returns of all previous reports. We are now able to add the returns of still another year—that ending July 31st last—and may very briefly compare some of the more significant annual returns.

In the year in which the ante-primary stage of silicosis was first legally recognised (1919-20) 562 cases were found to exist amongst the European miners of the scheduled mines. As I stated in my address of last year, these cases had not been produced in 1919-20, but represented the accumulation, as it were, of some years previous. In the year 1920-21, 219 fresh ante-primary stage cases originated amongst the Europeans; this represented 1.6 per cent. of the total miners examined. Amongst the natives, 74 ante-primary stage cases were certified in 1919-20, and 86 in 1920-21.

The total number of cases of silicosis in the primary and secondary stages which have been produced in European employees in each of the years since August 1st, 1917, have been 153, 349, 398, and 17. In native labourers the numbers are 31, 47, 52, and 48. The secondary stage cases produced amongst Europeans number 3, 2, 0, and 0; and amongst the natives 0, 3, 2, and 0.

Most Serious Form.

The cases of tuberculo-silicosis—the most serious form of the disease—which have been annually produced amongst our miners since August 1st, 1917, have numbered 116, 120, 24, and 17; and amongst the natives 232, 378, 394, and 276. Of ordinary pulmonary tuberculosis amongst Europeans, the annual numbers of cases have been 35, 36, 39, and 44; in considering these figures we must, of course, remember that since 1919 the legal definition of tuberculosis has been an expanded one, and cases of the disease in its "closed" form are now included. Amongst the natives the cases of tuberculosis for each of the last four years have numbered 946, 789, 794, and 810.

Twelve hundred and fifty-seven Europeans passed the initial examination of the Bureau last year, and were certified as physically fit for mining work. The services of only about half this number were required underground.

Among the evidences of the satisfactory nature of the work of the Medical Bureau, and of the general improvement in underground conditions, is the fact that of 8,095 white recruits for mining who have passed the initial examination since 1916, of whom 4,111 are known to have entered underground employment, not one has yet developed silicosis in any form.

Dust Sampling.

The dust sampling department of the Chamber carried out six surveys on the mines during the year. The average of the year of 1.6 milligrams shows a reduction of 0.4 milligrams compared with 1920, and the progressive reduction of average amount of dust found in mine air is most encouraging as an indication of the care that has been taken by mine managements and employees to prevent the formation of dust. Since the formation of the department in 1914 over 183,000 gravimetric samples of dust have been analysed and 40 surveys of the mines completed. During 1921, a large amount of experimental work on problems of ventilation was carried out by the department.

Medical Research.

The last annual report of the S.A. Institute of Medical Research contains much that is of interest to the industry. It is not necessary for me to recapitulate the numerous items of the report, but you will be pleased to hear that two fresh publications by the institute are now in the Press, dealing with experimental researches into scurvy and silicosis respectively. Many of the results of Dr. Delf's scurvy research are of particular value to us, in that they provide new and definite knowledge concerning the value of several of the foodstuffs available for our native labourers. The outstanding feature of Dr. Mavrogordato's researches into silicosis is the important part played by bacterial infection of the silicosed lung. Simple silicosis appears to be, in itself, a disease of but little gravity; its serious developments are all due to infection of the damaged lung.

Mine Benefit Societies.

The attempted amalgamation of mine benefit societies on the Rand resulted in disappointment. Apparently most of the members were in favour of the principle; but the requisite majority could not be got to agree to the details of the constitution of the amalgamated society, and the Chamber's offer of substantial assistance has therefore not been accepted.

"Safety First" Movement.

The Prevention of Accidents Committee of the Rand Mutual Assurance Company, Limited, still continues its campaign for the reduction of accidents on the mines. Mr. Frank Raleigh is the present chairman of the committee, which has the co-operation and assistance of the Association of Mine Managers, the South African Red Cross Society, and other bodies.

The fatal accident rate on the Witwatersrand gold mines for the past year was 2.28 per 1,000, and constitutes a new low record. This figure is gratifying when we remember that the rate of 1911 was 4.10 per 1,000, representing 880 deaths as against 441 for the past year—a saving of 439 lives. The officials and workers on the mines are to be congratulated on these results.

Behaviour Exemplary.

The behaviour of not only the mine natives but of all the natives on the Witwatersrand areas during the late crisis has been most exemplary, notwithstanding the wanton and unprovoked attacks made upon them by certain sections of the white population. The native mortality in the year 1921 shows considerable improvement over 1920, in spite of the fact that small outbreaks of typhus fever occurred and claimed a number of victims, and that there were also 506 deaths during the year due to influenza.

The total number of deaths from all causes for the year 1921 was 2,411, as against 3,017 in the year 1920, a saving of 606 lives.

The decrease in the number of deaths from tuberculosis and miners' phthisis among natives is particularly noteworthy. In 1920 333 natives died of tuberculosis; in 1921, 244. In 1921, 91 natives died of miners' phthisis, and in 1921 only 36. To balance this, however, there was an increase in the number of deaths from pneumonia, from which disease there were 418 deaths in 1921 as against 356 in 1920, giving a rate of 2.04 per 1,000 for 1920, and 2.45 per 1,000 for 1921. There was a slight decrease in the accident rate; there were 473 deaths from accidents due to mining in 1920, a rate of 2.72; and 428 deaths in 1921, a rate of 2.51. Homicides, suicides, and accidents not due to mining were responsible for 81 deaths in 1920 and 50 deaths in 1921.

The total death rate from all diseases was 11.34 in 1921 against 14.15 in 1920; and from all causes 14.14 in 1921, and 17.34 in 1920.

Low Death Rate.

The low death rate among natives on the mines is the result of painstaking care. In spite of the fact that a great deal of our recruiting is from areas where typhus fever is endemic, and has been even more prevalent last year than in the past, the precautions taken on the mines have prevented anything in the nature of a serious outbreak of this disease, and a great deal of credit is due to mine medical officers and compound managers in this connection.

It is interesting to note that among the industrial coloured population of the United States the mortality rate, in the experience of a large insurance company which covers five years of statistical inquiry, is 18.8 per 1,000 in the age group corresponding to the average age of our natives; and as this experience covers many occupations which in their nature are not so hazardous as mining, our low mortality rate can certainly be considered quite an achievement in industrial hygiene.

Collieries.

To enable South African collieries to compete in the oversea markets it has been necessary for the owners to reduce the pit's mouth price by 33 per cent., and for the Railway Administration to reduce their railage by about 29 per cent. Notwithstanding these drastic reductions, it is essential, in order to hold and extend the export trade, that a further reduction in railage rates should be made; and to attain this object it may be necessary even to reduce the railage rates to the pre-war basis. There has been a considerable drop in the tonnage of coal supplied to the mines, but beyond this the inland trade shows very little change.

Miners' Training Schools.

In my remarks on these Government miners' training schools last year, I stated that, consequent on a unanimous report of the Chamber's sub-committee in favour of a continuance of the schools steps were taken to bring the number of apprentices to full strength. I am glad to be able now to state that not only are the schools at full strength, but there is a list of applicants waiting for vacancies to occur.

With the assistance of the managers of the Modderfontein B Gold Mines, Ltd., and the City Deep, Ltd., sections of these mines have been set aside for the schools, and instead of, as in former days, the apprentices being trained in developing, stoping, or timbering, etc., the whole section is now run by the apprentices of the schools, so that they have to do all the work pertaining to the running of a section; and there is no doubt that apprentices under the present conditions will be afforded greater opportunities for becoming all-round miners than was the case before it was possible for the schools to be allotted sections of the mines. It is satisfactory also to report that the cost of these schools has steadily declined, and that there has been a very substantial reduction in the cost per apprentice.

I wish to express my gratitude to the vice-presidents, to the officials, and to the staff of the Chamber for the great assistance which they have rendered during what has proved to be an exceptionally difficult year.

Modder Deep Year.

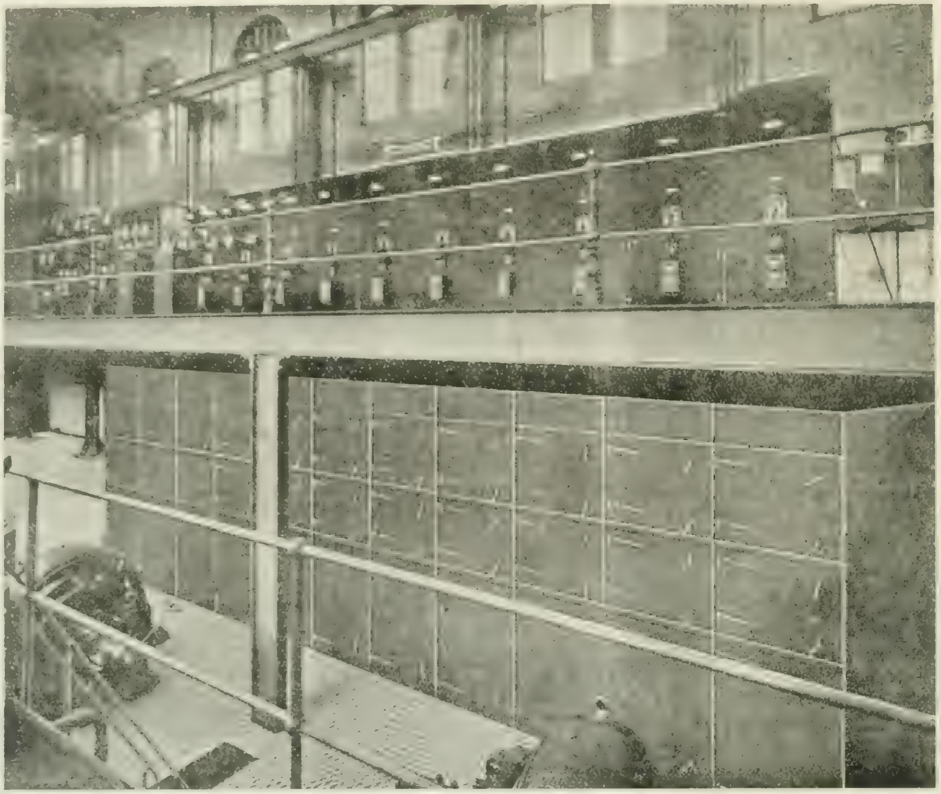
TOTAL PROFIT £932.394.

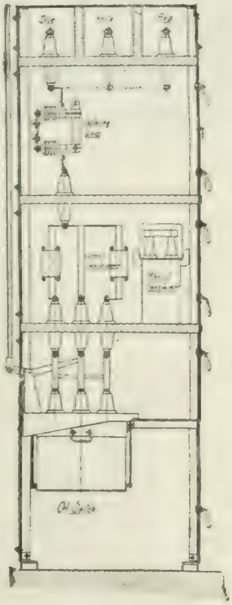
The total profit earned by the Modder Deep in 1921 was £932,394, an increase of £30,229 over 1920. In the course of his annual report the new consulting engineer writes: The working results obtained during the year 1921 show a further slight advance in profits earned and in the ore reserve position. The tonnage milled was 509,300 tons, or 1,600 tons more than during 1920. The tonnage mined was increased by 11,800 tons, but the combined underground and surface sorting was increased from 20·08 per cent. to 21·32 per cent. The yield of gold per ton of ore milled was 11·01 dwt., compared with 10·55 dwt. for the preceding year. Unfortunately the realised value of the gold per ton milled does not show a proportionate increase, the figure being 58s. per ton, as against 57s. 9d. for 1920. The working costs for the year show a welcome decrease from 22s. 8d. to 22s. per ton, an encouraging feature being the fact that the working costs for the second half of the year were 1s. per ton lower than the first half. The working profit was 36s. per ton milled, being an increase of 1d. per ton. The total profit from gold was £916,824, which, together with sundry revenue, amounting to £15,570, made a total profit of £932,394, an increase of £30,229 over that of the preceding year. These figures include an amount of £288,137 recovered in respect of premium and adjustments on gold, equal to 11s. 4d. per ton and 20s. 7d. per fine ounce. No expenditure was charged to capital account, the expenditure on additional boiler and compressor plant being borne by working costs. The supply of native labour was sufficient to meet all requirements. The health conditions continue to be satisfactory, the death rate from sickness having fallen from 11·18 per thousand for 1920 to 7·94 per thousand for 1921. The natives in the company's employ worked 98·96 per cent. of the possible time. There was no change in the stock of ore on the surface dump, the tonnage available remaining at 175,600 tons. The footage of development done during the year was 7,966 feet, an increase of 278 feet over the footage for 1920, while the values disclosed continue to be very satisfactory. The developed ore reserves as measured and valued at 31st December, 1921, amounted to 4,375,000 tons of an assay value of 9·3 dwt., over an estimated stoping width of 77 inches. This is an increase of 275,000 tons, a decrease of 0·1 dwt., while the width remains the same as last year. Investigations having proved the presence of iridium in the ore of the mine, arrangements were made during the past year to collect the iridium concentrate which had been accumulating in the reduction works, 222 ounces of concentrate being recovered. The quantity of iridium present is so small that the occurrence is of little commercial importance.

The Modder Deep Mine.

Heidelberg District Geology.

We have to acknowledge receipt of a copy of the Proceedings of the Geological Society of South Africa for last year. From an interesting contribution by Dr. Mellor on Dr. Rogers' paper on the Geology of the Heidelberg District, we take the following:—"From the point of view of the economist and the investor, the nomenclature of reefs is of little moment. From the economic point of view, we are all prepared to admit that the only thing that really matters about a reef is its gold contents, and consequently its payability as a working proposition. A rose by any other name would smell as sweet, and a reef that behaves handsomely in the way of gold production will never want for appreciation from the economic side. Speaking as one who recently has had more to do with the hard practicalities of geology than with the purely scientific side, I may say that there is only one really essential demand made, in the first instance by the mining engineer and later on by the investor, with regard to any reef for which their attention is claimed, and that is that the gold is there, or, if I may be permitted to use a popular but significant expression, the reef must be able to 'deliver the goods.' The advocate of the claims of any particular reef who can comply with this demand is in the happy position of being practically independent of the niceties of geological nomenclature. On the general question of the nomenclature of reefs and of the correlation of the various horizons of the Witwatersrand system in different parts of the Rand, there has been in the past considerable difference of opinion. The accumulation of evidence from mining and boring operations added to that furnished by the detailed mapping of the Rand, which has now been extended to the Heidelberg area with consistent results, leaves no room for uncertainty for those willing to devote sufficient time to following the evidence available. In this connection I may perhaps be allowed to mention that there is reason to believe that statements have frequently been made that my views with regard to the correlation of the beds of the Far East Rand as expressed in various papers read before the Society have been changed. I should like to take this opportunity of stating that no such alteration has taken place, and it is satisfactory to find that Dr. Rogers, who came to the Heidelberg area entirely uncommitted to any particular views on such points has found no reason, after his detailed and thorough survey of the district, to differ from the conclusions drawn from a study of the same system of rocks on the Witwatersrand."





6,600-volt G.E.C. Stonework Cubicles and Operating Board installed in a large Corporation Power Station. In the foreground are two 500-kw. G.E.C. Rotary Converters. To the left of operating board Rotary Converter Switchgear can be seen.

G. E. C.

Stonework Cubicle Switchboards

THE CUBICLES are divided into suitable cells so as to isolate the gear to the greatest practicable extent, thus ensuring a maximum of safety.

SPECIALISTS IN HIGH TENSION SWITCHGEAR

The British General Electric Co. Ltd.

Representing THE GENERAL ELECTRIC CO., LTD., of England

Head Office:—

Johannesburg

Corner Loveday and Anderson Streets

Box 2406 Phone 4242/3 Tel.: "Current"

Capetown

83/89, Castle St.

Box —— 1327

Phone —— 1401/2

Tel.:—"Induction"

Durban

56, Field Street

Box —— 922

Phone —— 1793

Tel.: — "Ampere"

Agents at:—Port Elizabeth, East London, Maritzburg, Bulawayo, Delagoa Bay, Beira, Dar-es-Salam, Tanga, Zanzibar, Mombasa, Nairobi, Uganda, Etc.

The Geduld Year.

NET PROFIT £296.637.

The net profit earned by the Geduld in the year ended December 31, 1921, was £296,637. A balance of £55,547 was brought forward, which made up a total of £352,184 available for distsibution. Dividends and fees absorbed £222,716, which left a balance to be carried forward of £129,467. Expenditure on capital account, debited to working capital, amounted to £181,000. The new consulting engineer, Mr. H. R. Hill, in the course of his annual report, writes as follows:—The working results for the year 1921 showed that the preceding year's improvement has been maintained. The tonnage milled during the year was 537,800 tons, being an increase of 11,100 tons. 17·28 per cent. of the ore mined was sorted as waste, being an increase of 2·08 per cent. 3,113 tons were taken from the reserve dump on surface. The yield of gold per ton of ore milled remains at the same figure of 7·1 dwt., but owing to the lower selling price of gold, the realised value was 37s. 4d. per ton milled, compared with 38s. 10d. for the preceding year. The working costs show a welcome drop from 24s. 1d. per ton milled to 23s. 7d., and the position with regard to working costs would indicate that the peak of highest cost was reached in February, as the costs for the second half of the year are 1s. 7d. below those of the first half. The decrease in working costs were insufficient to counterbalance the drop in the realised value of the gold, so that the profit per ton milled showed a decrease from 14s. 9d. to 13s. 9d. The total profit from gold was £369,566. The addition of sundry revenue, amounting to £16,562, brings the total working profit to £386,128, or £19,887 less than the preceding year. These figures include an amount of £198,030 received in respect of premium and adjustments on gold, equal to 7s. 4d. per ton milled, and 20s. 10d. per fine oz. The native labour supply was adequate throughout the year to meet all requirements. The health conditions have been satisfactory. The death-rate among the company's natives was 5·07 per thousand from sickness and 3·28 per thousand from accidents. The quantity of water raised from the mine was 720,000,000 gallons, or 6,000,000 gallons less than in the preceding year. Of this amount, 83,000,000 gallons were pumped at No. 7 shaft and 34,000,000 gallons were tapped through retaining valves in cemented fissures in the area east of No. 2 shaft, in order to supply water to certain neighbouring mines during the dry season. The cost of pumping such supply was charged to the companies concerned. No. 7 shaft was sunk 1,490 feet during the year until the necessary depth of 2,942 feet was attained. The work of cutting the stations and bins, etc., was then proceeded with, and is well advanced. The total development footage for the year, including vertical shaft sinking, was 20,277 feet, being 1,638 feet more than in 1920. Development, particularly in the southern area in the vicinity of No. 7 shaft, has continued to show very satisfactory results. The ore reserves, as measured and valued at 31st December, 1921. amounted to 3,545,000 tons, having an assay value of 8·1 dwt. over a stoping width of 62 in. These figures represent increases of 325,000 tons, 0·1 dwt. in value and 1 in. in width. The development account stands in the books at £189,962, equal to 1s. 1d. per ton of ore developed. 2s. 9d. per ton milled was charged to working costs for development redemption. The capital expenditure for the year amounted to £181,000, of which £152,468 was spent in connection with No. 7 shaft.

The gold production of the world is estimated by the "Statist" to amount to 15,500,000 ounces, though the final figures for 1921 are not yet available.

Here and There.

WITH APOLOGIES FOR A SLIGHT DEPARTURE FROM THE SERIOUS IN AN ESSENTIALLY SERIOUS PAPER.

We hope that the Labour Adviser to the Ministry of Labour in Great Britain, who is coming to South Africa to sit on the Government's latest Commission, will help to brace up the industry. The Rand could well do with a pair of braces at the present time.

* * *

"With 450 Labour candidates in the field it would be madness not to realise the immense dangers." So said Mr. Winston Churchill at Northampton the other day. And this from a prominent member of the Government which was going to make "the world safe for democracy"

* * *

The Chamber of Mines Sengite suspense account shows the estimated cost of Sengite to the industry at 31st December, 1921, to be £182,026 12s. 10d. Somehow or other, industries commencing with S do not appear to prosper too well in this country. Sengite, salphos and steel have each been somewhat disappointing.

* * *

A new interpretation of S.O.S.—"Save our Spondulex!"

* * *

At Tuesday night's meeting of the Johannesburg Town Council the Mayor (Mr. S. Hancock) announced that Mr. Green applied for leave from the meeting. Councillor Nicholas also applied for leave of absence from all meetings of the Council and committees for three months from date. Leave was granted in both cases. Johannesburg seems to go from one misfortune to another.

* * *

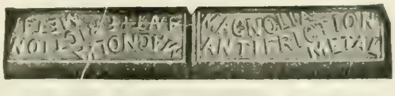
We understand that Dr. Molengraaff is going to lecture to the Geological Society of South Africa on the shifting of the Poles. This is a very popular theme in South Africa at the present moment.

* * *

According to the *New York Times*, Mr. Burnham, president of the American Game Protective Association, states that he has learned that American members of the Stefanson expedition hoisted the Stars and Stripes on Wrangel Island simultaneously with the hoisting of the Union Jack, thus raising the question of who established the right of possession. Why not refer the question of Wrangel Island to a few of the Senior Wranglers of the House of Wrangle which is now sitting at Capetown.

TRADE MARK

MAGNOLIA
ANTIFRICTION METAL
"FLOWER" BRAND.



HAS THE LOWEST CO-EFFICIENT OF FRICTION.
KEEPS down the bill for lubricants, making **BEARINGS** smooth as glass and keeping them **COOL** under heaviest pressures and highest speeds.
Manufactured and Sold By—
THE MAGNOLIA ANTI-FRICTION METAL CO. OF GREAT BRITAIN, LIMITED,
49, QUEEN VICTORIA STREET, LONDON, E.C.
Agents for South Africa: FRASER & CHALMERS, Ltd., Johannesburg. Bulawayo and Salisbury

The build *of the* Drill

SIXTY-FIVE years ago the first Climax Drill was made. Its manufacture marked an era of progress in mining machinery because that Climax Drill was built for service. Each year Climax Drills have been improved to meet the demands of modern mining conditions, until, at the present time, they stand alone for drilling speed, low cost of maintenance and popularity.

Save your bills-
Climax Drills
British——from Handle
to Steel-Point

CLIMAX DRILLS

CLIMAX ROCK DRILL & ENGINEERING WORKS Lᵀᴰ
4, Broad Street Place, London, E.C.2. Works:- Carn Brea, Cornwall.

(INCORPORATED IN GREAT BRITAIN)

Local Address: **49, STELLA BUILDINGS,**

Corner Rissik and New Streets, JOHANNESBURG.

P.O. Box 4256. Telegrams: "Thumbscrew." Telephone 2794.

The Robinson's Outlook.

The annual report of the Robinson has been issued. As compared with the previous year's operations, there was a decrease in the tonnage milled of 14,900 tons. The yield obtained in fine dwts. showed a further decline of ·32 per ton, which with a lower price obtained for the gold produced makes a decrease in the recovery value of 2s. 11d. per ton milled. On the other hand, working costs showed a decrease of 4d. per ton, the net result being a decrease in revenue of 2s. 7d. per ton milled. The working profit earned was £23,978 12s., being a decrease of £62,221 3s. 10d. The consulting engineer in his report states that, in view of the recent fall in the price of gold it will no longer be possible to work the Main Reef ore body at a profit, and recommends that the scale of production be reduced from in the neighbourhood of 40,000 tons per month to 12,000 tons. The Directors, therefore, regret to advise that on resumption of work on the mine after the present strike, the basis of operations will have to be reduced, approximately, to the tonnage which can be mined monthly from the ore of better grade remaining in the mine, viz., to a tonnage of about 12,000 tons per month. Apart from the low-grade Main Reef ore, there only remains in the mine about 63,000 tons of South Reef and Main Reef Leader, chiefly in the form of pillars. The white and native labour force will be reduced by approximately 245 whites and 2,000 natives. Towards the end of the financial year the future of the company became most uncertain, owing to the continued fall in the price of gold. It was hoped, however, that the mine would struggle on for a few months longer in 1922 on the recent output basis, but this is now not possible owing to a further fall in the price of gold and the heavy losses made due to the strike. Moreover, since the strike started, No. 2 Shaft, the main hauling shaft of the mine, has been temporarily completely closed for a distance of about 60 feet by a fall of rock. Owing to the fluctuating price of gold, it is uncertain for what further period the company is likely to continue profitable operations.

Durban Roodepoort Deep

The Durban Roodepoort Deep annual report makes depressing reading. In comparing the results achieved with those of the previous year it will be seen that there was an increase in the tonnage milled of 40,700 tons, and an improvement in yield of ·382 fine dwt. per ton, which latter is largely offset by the lower price obtained for gold. Working costs showed a reduction of 1s. per ton milled. The net result is an increase of 1s. 4d. per ton milled in the profit earned, which amounted to 2s. 4d. per ton milled. The working profit was £36,490 5s. as against £13,682 11s. 2d. in 1920. Development operations during the year were considerably increased with satisfactory reef disclosures. The ore reserves which were re-estimated and re-valued at 31st December, 1921, remain practically the same as at the end of the preceding year. The position of the company was reviewed at length at the annual meeting, held on 19th May last, and shareholders were advised in the report for the quarter ended 30th September, 1921, that the Board had decided not to resume the sinking of the new circular shaft, but that the matter would be reviewed early in 1922. The results for the last quarter of the year showed a loss of £1,794 brought about by the reduction in the price of gold; this, coupled with the strike of white employees, which commenced on 10th January, and which has not yet terminated, makes it impossible for the Board, at the present, to arrive at any decision regarding the future policy of the company. Unless a large reduction can be made in working costs it is unlikely that the company can earn profits with gold at the present price of about 95s. per fine oz. At present the Board cannot contemplate re-starting sinking in the new circular shaft.

Mr. H. Stuart Martin, the consulting engineer, writes, *inter alia*:—The considerable improvement in tonnage milled, viz., 40,700 tons, was due to a good supply of native labour throughout the year and freedom from interruptions to hoisting, the main haulage shaft giving very little trouble during the year. The output of gold was 107,994 fine oz., which, based on the standard value of gold, had a value of £453,486; the cost of production amounted to £531,167. Thus, in spite of an increase in output of 40,700 tons, in yield of ·382 dwt., and a reduction of 1s. per ton in working costs, operations based on a normal gold value would have resulted in a loss of £77,681; the higher price obtained for gold converted this loss into a profit of £36,490. Development operations were considerably increased, the total footage, viz., 12,826 feet, being 4,096 feet greater than in 1920, whilst the efficiency of this class of work showed distinct improvement. Operations were chiefly confined to the 15th and 16th levels, a high percentage of payability was maintained, average reef disclosures showing remarkably little change from the general past average value of the mine. The tonnage of payable ore developed was 354,600 tons of 6·7 dwt. value. Compared with the preceding year, the position has not shown any important variations. The ore reserve is, however, better balanced, and there are now more available stope faces and points of attack for development. In my report for 1920, reference was made to meetings with the employees of the mine with the object of reducing expenditure by a re-arrangement of underground duties. The results obtained have not been sufficiently far reaching to materially alter the profit-earning capacity of the mine, and stronger action is imperative to place the property on a sounder footing. The following comparison of expenditure in 1915 as compared with 1921 is illustrative of this point:—

	1915.	1921.
Tonnage milled	321,030	317,900
Development footage (feet)	13,201	12,826
Number of white men employed ...	300	313
Number of natives employed	3,039	3,027
Yield per ton milled (dwt.)	6·416	6·794
Fine ounces produced	102,985	107,994
Profit on standard price of gold ...	£52,051	Nil
Loss on standard price of gold ...	Nil	£77,681

"The figures disclosed in the above statement reveal an intolerable state of affairs, and it is obvious that this mine cannot be restarted after the strike, which commenced on 10th January, 1922, under the economic conditions prevailing at the close of the year 1921."

Rand Co-operative Smelting Works.

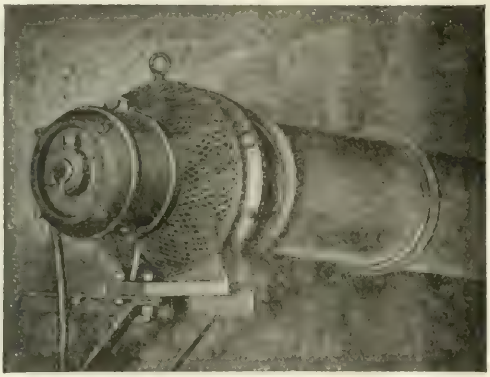
The Chamber of Mines has decided finally to close the shoes and dies works at the Robinson Mine, and the transfer of the old plant to, and the erection of the new plant at, Driehoek is practically complete. With regard to the by-products branch, the tonnage of black sands purchased from mines is decreasing, and the percentage of miscellaneous concentrates, which is mostly of a very refractory nature, has been increasing, as a result of which the average value of residues has been materially higher. Experiments with a view to improving the extraction have been carried out, and it has been decided to erect a working-scale Sintering plant. If this proves satisfactory, the black sands plant will be closed down.

Box 3807. **Tel. 5892.**

WRIGHT'S ROPES

H. ALERS HANKEY - - - Sole Agent.

SPECIAL VENTILATION IN MINES



. SEMENS .
SCHUCKERT
SCHLOTTER
BLOWER.
80 % EFFICIENCY.

AIR OR ELECTRICALLY DRIVEN. —— —— COMPACT AND POWERFUL. A NOTEWORTHY ADVANCE IN DESIGN. — MOTOR CANNOT BE OVERLOADED WHATEVER THE DUTY DEMANDED. —— THE IDEAL BLOWER FOR DEVELOPMENT WORK.

BRANCH OFFICE FOR SOUTH AFRICA:

C. KLEUDGEN, LTD.,
Corner of LOVEDAY and MARSHALL STREETS, JOHANNESBURG.
P.O. Box 1164. Telegrams: "KLEUDCO." Telephone Central 5435.

BIN AND HOPPER GATES

¶ Robins Gates are made in many types and sizes, most of which are standardised.

¶ Among these are: Single and double cut-off gates, rack-and-pinion gates, under-cut gates, radial finger gates.

¶ In designing, special thought is given to the characteristics of the material to be handled, and to convenience and ease of manipulation.

¶ Method of operation is carefully suited to the need, whether by hand-lever, crank, chain, air, or electricity.

¶ Structural steel or cast iron are used, depending on the requirements.

Robins Conveyors (S.A.), Ltd.
(Head Office: Robins Conveying Belt Co., New York, U.S.A.)

MILLAR DENNIS
ORIGINAL MAKERS OF

"BRADFORD INVERTED"
PLUG COCKS.

SOLE AGENTS:
GEO. CRADOCK
—AND CO. (S.A.), LTD.—
75-77, CULLINAN
BUILDINGS.

P.O. Box 316. Telephone 539.
Tel. Add.: "ROPES."
JOHANNESBURG.

The South African Mining and Engineering Journal.

HEAD OFFICE: 176-180 Stock Exchange Buildings (2nd Floor), Fox Street, JOHANNESBURG, Union of South Africa.

Telephone **913.** P.O. Boxes **963** and **4573.**

Cables and Telegraphic Address: "Mining Journal."

Annual Subscription Rates: Oversea, £2; Union of South Africa and Rhodesia, £1 10s.; Local Delivery (Town only), £1 6s., payable in advance.

Agents for Great Britain and America: Argus South African Newspapers, Ltd., Byron House, 82-85, Fleet Street, London, E.C. 4.

Copies of this Journal are obtainable at all Branches and Agencies of the Central News Agency, Ltd., at all News Agents and Railway Bookstalls throughout South Africa, and at the London Agency as above.

CONTENTS. PAGE

Articles.

A New Standard Stope Lay-out for Flat Reefs 1017
Our New Copper Mines 1019
Chamber of Mines Annual Report 1021
Modder Deep Year 1025
The Geduld Year 1027
The Robinson's Outlook 1029
Durban Roodepoort Deep 1029

Editorials:

The Chamber of Mines Meeting 1031
The Indemnity Bill 1032
The Industrial Commission 1032
Busy Man's Page 1034
Industrial Statesmanship 1035
Finance and Information for Investors 1036
The Week in the Sharemarket 1037

Engineering Section:

Electrical Research: Latest Progress 1039
Letters to the Editor 1041

Rhodesian Section:

Rhodesian Chamber of Mines Annual Meeting... 1043

Trade and Industries Section:

The Week in the Mining Material and Engineering Trades 1045

EDITORIAL.

CHAMBER OF MINES MEETINGS.

Annual meetings of the two Chambers of Mines, which in large degree control the mining industries of the Union and of Rhodesia, have been held during the past few days, and in another portion of this issue we give extracts from the chairmen's addresses and from the speeches of the gentlemen who seconded adoption of the reports. At Bulawayo Sir Bourchier Wrey has been reappointed to the Presidency of the Rhodesia Chamber of Mines, an office which he has filled with conspicuous ability for a number of years. Mr. J. G. Macdonald, of the New Rhodesian Consolidated Gold Fields group, who seconded the adoption of the report, dealt at some length with the labour position in Rhodesia and made an interesting reference to some new discoveries which recently had been made in Southern Rhodesia and which gave promise of developing into important mines.

The annual meeting of the Transvaal Chamber of Mines, held on Monday afternoon, was particularly noteworthy since it constituted the first meeting of the representatives of the mining industry after the great strike and the subsequent revolution, which have placed the whole Reef in a state of flux, out of which it is believed and hoped that peace and prosperity will speedily crystallise. Then, too, it was the first occasion on which the Chamber had assembled in the new home of the headquarters of the industry which has been built on a capacious site facing the General Mining Buildings, and adjacent to the new Stock Exchange. Mr. Buckle, the Chamber's President, in a lengthy and able review, dealt in detail with the outstanding results of last year's work and made an eloquent plea for the relief of the industry from further burdens in the shape of phthisis taxation. He also referred to the momentous events which have occurred since the conclusion of the year, events which have profoundly affected the mines, the Rand and in large degree South Africa. He gave an outline of the conditions under which the Chamber is prepared to recognise trades unionism in the future, and in view of all that has happened in the past and more particularly during the last three months we do not think that anyone can regard these proposals as being other than scrupulously fair and just and calculated to secure more freedom from industrial unrest than has been our lot during the past few years. Mr. Buckle paid an appropriate tribute to the loyalty of all those who recently have assisted the Government in the suppression of the Revolution, and expressed the Chamber's sympathy with the relatives of those who have lost their lives in the suppression of the disturbances. He also gave utterance to the industry's debt of gratitude to the mine officials and particularly to the compound managers who have rendered such magnificent service during a period of great difficulty and danger. The President also paid a fitting tribute to the conduct of the natives who, guided in large degree by the compound managers, behaved so splendidly during the outbreak.

Mr. Christopherson, who seconded the adoption of the report, made the principal topic of his address an earnest appeal to the leaders of the industry to take to heart the lessons of the past, and he contended that the best means of insuring industrial peace in the future would be by means of restoring authority to the mine managers, who would be able to supply that touch of personal interest without which a contented labouring community is hardly to be expected. The "S.A. Mining and Engineering Journal" has frequently during the past few months expressed the conviction that usurpation of the authority of the man on the spot by higher offices was detrimental to the industry, and in this connection we believe that not only the Chamber of Mines but also the head offices of the groups should recognise that in Mr. Christopherson's speech is probably to be found the best remedy for the spirit of discontent, distrust and unrest which has been abroad on the Reef for so long.

Years ago, in the epoch preceding the great amalgamations which have failed to secure the economies expected of them and in the days before the craze for centralisation which undoubtedly has been overdone, there were men like Burly Joe Richards who knew nothing whatsoever about Brunsvigas or collective bargaining but who managed to achieve some exceedingly good performances in the way of breaking ground. Since those days conditions on the Witwatersrand have greatly changed. We possess plenty of mine managers on the Reef to-day who are certainly comparable in managerial ability with the autocrats of two decades ago. But the trouble is that the men are not, generally speaking, the skilled miners of the years gone by. The economic conditions have entirely changed. The Rand has become deeper, the workings are more scattered and the grade of ore has fallen. Taxation has increased and the costs of maintaining a system of industrial hygiene of which we knew next to nothing twenty years ago have grown enormously. Trades unionism has increased in power and arrogance, wages have risen, working hours have been curtailed, efficiency has declined and the cost of stores has advanced in a very moderate degree. As the political progress of the [illegible] has been powerless to combat the cumulative effects of a multiplicity of circumstances which since 1914 have resulted in greatly increasing the cost and difficulty of [illegible]. In some quarters it is held that the central control policy of the mines has in large degree been responsible for the growth of some of the more important adverse factors recapitulated above. These critics argue that the central executive policy built up the aggressive edifice of labour until it became so strong and domineering that a clash was inevitable, and that it became a question whether the bricks and mortar of the Chamber of Mines Building would survive those of the Trades Hall. To decide the truth or untruth of such an allegation we must probe further afield than the Rand. To view this matter in its proper perspective one must appreciate all the consequences of the Great War and of the specious catch phrases concerning the rights of free speech and small nations and the making of the world safe for democracy coined by the eloquent lawyer politicians of Europe. An impartial observer visiting this planet from, say, Mars would be rightly forced to the conclusion that since the Armistice the world has been made far safer for anarchy than for anything else. The Chamber of Mines has had, no doubt, to take its lead from other and greater organisations. But we think that after the Armistice, when the Imperial necessity for the maintenance of the gold output had in some degree disappeared, the industry's leaders should have refused further concessions and should have then disputed the growing domination of Labour. But the gold premium helped to confuse issues, and only now, three and a half years after the cessation of the Great War, fought to make the world safe for heroes to live in, has it been found that the heroes who fought in that War were forbidden to return to their work on the mines by a party of Communist conspirators, who camouflaged a Revolution in the robes of an industrial dispute. Against such conspiracies the kindly touch and the personal element are useless. The attitude persevered in by the Chamber of Mines during the recent strike was to our way of thinking admirably strong and consistent. There can be no doubt about it that if the South African Industrial Federation and its dangerous political and anarchical adherents had succeeded in imposing their will upon the Chamber they would very soon have been pointing pistols at the heads of every person in South Africa, as the direct actionists pointed pistols at the heads of everyone on the Reef. But this movement did not succeed. It broke down at the first and biggest buttress. Had the Chamber given in, the strike and its associated revolution would only have been postponed until the plans of the Reds were more thoroughly completed than they were three weeks ago. We agree with Mr. Christopherson that every effort should be made to get back to industrial peace and that the mine managers should have the measure of authority which they once enjoyed restored, but we believe, too, that the need for maintaining a strong executive organisation representative of the whole mining industry has in no sense diminished. Mr. Christopherson paid a well-merited tribute to the work of the Chamber during the recent difficult times, and declared that there would be a vast amount of useful work to be performed by the Chamber of Mines in the future as well. And here, too, we are in very full agreement with the [illegible] head of the Gold Fields group. Let the mine managers by all means have all the power they possibly can wield on their own mines. We hope and believe that much good may result from such a policy. But in view of the growth of trades unionism all the world over and the necessity for appreciating Labour and kindred problems in all their international objects, and also because of the peculiar and complex conditions which exist in this country, we believe that a central executive organisation, such as that which is provided by the Transvaal Chamber of Mines, is the first essential to industrial security, peace and prosperity. In our estimate the useful and legitimate functions of the Chamber have in no wise decreased since the calling of the lamentable strike. On the contrary, they have increased.

THE INDEMNITY BILL.

After a woeful waste of time and display of Nationalist and Labour eloquence, the Indemnity Bill has passed the first stages of its course through Parliament. With promulgation of the Bill, Martial Law will automatically cease and the Courts resume their normal procedure. The chief pretext used by the Opposition for delaying the progress of the Bill was a demand for Government inquiry into the revolt before. General Smuts had no difficulty in showing the unsoundness and insincerity of this attitude. After all, Martial Law is simply the negation of the ordinary civil law, and it is in the general interest that it should cease to function as soon as possible after it is no longer urgently required. In so far as it strengthens the hands of the police, most law-abiding citizens would probably like to see it continued indefinitely. The Prime Minister has promised that if and when the ordinary judicial proceedings justify a public inquiry into the facts of the revolt it shall be held, but till then there is no need to interfere with the usual processes of the Courts. Already he has appointed an Industrial Commission to inquire into the main questions arising out of the strike, and he has secured for the personnel of the Commission several disinterested and highly-respected gentlemen who together constitute about as impartial a Commission as it seems possible to find. With these efforts of the Prime Minister everyone outside the yelping chorus of the Opposition in the Assembly seems abundantly satisfied, and it is recognised that General Smuts has done all it is reasonably possible to do in order to clean up the recent mess on the Rand, to bring to justice the perpetrators of the crimes that have disgraced it, and to get at the truth of the economic issues that formed the original cause of the dispute. Parliament will now, it is earnestly hoped, get on with the business of the country. Over six weeks have been devoted to talk about the strike and the rebellion, and mainly by critics of the Government who have shown themselves totally misinformed of the course events were taking. The country is crying out for some evidence of constructive statesmanship to save it from the slough of despond into which as a consequence of the labour troubles, it has drifted. The Budget figures will be available in a few days, and one must expect them to make our flesh creep with the deficits and extraordinary outlay due to recent events. It is up to both Nationalist and Labour critics of the Government to sink petty spite and grievances in face of the plight of the people and to support the Government in its efforts to provide employment. Schemes to grapple with the evil will be brought forward by Government, but the question is will those proposals go far enough and prove practical enough to relieve the prevailing distress and lack of work. From outside sources, such as America and Mauritius, proposals have been made to the Government to provide capital for new railways. In view of the unprecedented severity of the crisis in the labour market and the urgent need for broadening the basis of the country's industrial development, all parties must unite to turn all offers of this kind to the best advantage. If the moment be unpropitious for the issue of another Government loan for public works—and we do not say that it is—then private capital and enterprise must be encouraged to step in and assist in the great work of development. For these reasons it is urgent that no more time should be lost in splitting hairs over the Indemnity Bill. Martial Law should immediately be brought to an end; the work of "cleaning up" be relegated to the proper Courts, and Parliament must waste no further time before setting itself to the rehabilitation of the country.

THE INDUSTRIAL COMMISSION.

The personnel of the Commission appointed by the Government to deal with the industrial issues arising out of the strike should meet with the approval of all whose minds are not jaundiced. In view of the motion which was passed through the House of Assembly and which called for the appointment of an impartial body, the Government have not considered it advisable, because of that motion, to appoint on this Commission any nominees of either party to the dispute, and in consequence of that the Commission has been constituted as follows:—The chairman will be Sir William Solomon, of the Appeal Court; Sir Robert Kotze, the Government Mining Engineer, will be a member of the Commission, and also Sir J. Carruthers Beattie, the principal of the Capetown University. In announcing the personnel and terms of reference of the Commission in the House on Tuesday, the Prime Minister said:—The Government have been very anxious to secure for the Commission the widest experience of labour problems, especially of a mining character, that it is possible to get, and have been in correspondence for some time with the British Government to secure a man whose ability and knowledge in this field will be beyond question. I am very glad to say that we have secured the appointment, through the British Government, of Mr. William Brace, who is now Labour Adviser to the Ministry of Labour in England, and was for many years the leader of the South Wales Coal Miners, and probably is better acquainted in England with the mining problems and with labour problems in their widest aspect than any other man I am acquainted with.

The appointment of Mr. Brace is, to our way of thinking, a touch of genius for which we probably have to thank General Smuts. But, of course, the narrow-minded enemies of the Government must subject the constitution of the Commission to criticism. Members of the Opposition asked what special knowledge of South African mining conditions Mr. Brace had got, and what qualifications Sir Carruthers Beattie possessed. Of course, if gentlemen more closely associated with the industry had been mentioned, there would have been much more dissent unless Mr. Joe Thompson and Mr. Tielman Roos had been nominated. The Government has done its best to get an absolutely impartial Commission together. Capital is not represented at all. Labour has the advantage, but Mr. Brace, as the Prime Minister aptly remarked, very "fortunately for us," is entirely outside the sphere of South African mining labour, but he has been the leader of the Welsh coal miners, the largest coal field in Great Britain. "He has been their trusted leader for many years, and is now the Labour Adviser to the Ministry of Labour, and the Government feel that his appointment and also his experience and his outlook on the whole field of labour problems will be of great advantage to this Commission and the country where we are dealing with problems, labour problems, and mining problems, which are of the widest and most difficult character," continued the Premier.

The reference to the Commission is to inquire into and report on the following matters:—

(1) The effect and extent of the Status Quo Agreement of 1918 on the gold mines of the Witwatersrand and the necessity for its continuance, variation or abolition in whole or in part.

(2) The desirability or otherwise of establishing any system for regulating the ratio of European to native labour in the gold and coal mines of the Transvaal.

(3) The methods to be adopted by the industry to effect economies, to promote efficiency, and to secure the maximum field for employment of European labour.

(4) With a view to working the largest number of gold mines, the possibility of classifying the mines into two or more grades which may employ different ratios of European to native labour or practice different systems of wages and overhead charges and the establishment of machinery for effecting and controlling such classification.

(5) The recent dispute in the coal mining industry and between the Victoria Falls Power Company and its employees, and to make recommendations as to the points at issue.

We can only hope that good will result from this further inquiry by the Government into the thorny problems of mining on a field which is sedimentary in origin and volcanic in its present character. If as a result of the Commission's labours some metamorphosis in the direction of tranquility can be made possible, the people of South Africa will be truly grateful.

Notes & News.

An Important Business Meeting.

The annual convention of the National Foreign Trade Council of New York City is meeting in Philadelphia, Pennsylvania, on May 10, 11 and 12, 1922. The council, through the medium of the office of the American Trade Commission, Standard Bank Chambers, Johannesburg, desires to extend to business men in South Africa who may be visiting the United States a cordial invitation to attend this convention, which affords an opportunity for local business men to meet in one place a very large and important gathering of representative business houses, especially those interested in oversea markets. If any members of South African business organisations contemplate a visit to the United States they will be welcome, and every assistance will be given them to meet American manufacturers of lines in which they may be interested. There is a nominal fee, which includes the official banquet. The American Trade Commissioner will be pleased to furnish any information that may be required, or Mr. O. K. Davis, secretary of the National Foreign Trade Council, 1, Hanover Square, New York City, would be pleased to be informed in advance of any business men from South Africa that might be able to attend.

* * *

The Outlook for Copper.

The debate on the sad position of the Messina and Namaqualand copper mines in the Assembly this week lends interest to the following description by an American firm of the outlook for copper. They give the following reasons for expecting improvement in the position of copper:—"(1) The longer copper metal remains around the low price of 12c. per lb. the more numerous will become the uses for copper by reason of the cheapness of a valuable article. A great many of these uses were lost during the War on account of the high price of copper and the fact that there was very little of the metal available for industrial purposes, nearly all the production being demanded by the Government for war material. (2) The gradual increase in the consumption of copper by reason of the resumption of industrial activity. It is reasonable to suppose that the present extreme dullness will not continue for any great length of time. (3) The getting back of the old uses for copper metal by the efforts on behalf of the Copper and Brass Research Association, which is a combination of the copper producers, fabricators, and manufacturers; the advertising by the various copper and brass interests individually. (4) About 75 per cent. of the production is cut off on account of most of the mines closing down about 1st April, 1921. This might have about the same effect on copper metal eventually as a crop failure in wheat, corn, or cotton. For instance, copper and cotton were selling together around 12c. per lb. for about seven months, and recently cotton moved up to about 19c. per lb., partially by reason of a short crop. No sensible person would expect the big copper companies to start operations until the surplus stocks of the metal have been further reduced and there is a fair margin of profit between cost and selling price. (5) The supply of scrap brass or secondary copper put on the market by reason of the termination of the War is gradually being exhausted, and as this takes place the demand for primary copper increases. The surplus stocks of copper metal are now being lowered, and it is only a question of time when the surplus stocks will be reduced to such a figure that the big mines now closed down will be justified in resuming production. In other words, dividends have been passed and the mines closed down. The next thing to look forward to in the industry will be the starting of operations at the mines, and then later the resumption of dividends. The discounting of these events will mean speculation for the rise in copper shares. (6) The financial strength of practically all the big copper companies."

THE BUSY MAN'S PAGE.

What to Read in the Technical Press.

Mining.

Ventilation and Human Efficiency.—Mining and Scientific Press, February 25, p. 259.

Old and Modern Explosives.—Iron and Coal Trades Review, February 24, p. 269.

Accident Prevention.—Mining and Scientific Press, February 18, p. 227.

Fire Fighting in Metal Mines.—Mining and Metallurgy, February, p. 25.

Methods of Underground Mining.—Mining and Metallurgy, February, p. 27.

Engineering.

Experiences with Gas Engines.—Iron and Coal Trades Review, February 24, p. 263.

Structural Steel Practice.—Mining and Scientific Review, February 18, p. 221.

Developments in Power Station Design.—Engineer, February 24, p. 201.

Electric Welding.—Engineer, March 3, p. 246.

A Modern Locomotive.—Engineer, March 3, p. 317.

Coal and Coke.

Industrial Fuels.—Iron and Coal Trades Review, February 24, p. 281.

Microstructure of Coal.—Colliery Guardian, February 24, p. 468.

Brown Coal and Lignite.—Engineer, March 3, p. 305.

American Coking Practice.—Engineer, March 3, p. 310.

Coal Mining on the Film.—Engineer, March 3, p. 316.

Iron and Steel.

Iron Ore Resources of Europe.—Iron and Coal Trades Review, February 24, p. 266.

British Cast Iron Research.—Iron and Coal Trades Review, February 25, p. 276.

Electricity.

The I.E.E. Jubilee.—Electrical Review, March 3, p. 290.

Interconnection of A.C. Power Stations.—Electrical Review, March 3, p. 315.

Oil and Oil Shale.

Oil in Southern Oklahoma.—Economic Geology, February, p. 15.

Estimating Petroleum Reserves.—Economic Geology, February, p. 40.

Petroleum and Natural Gas.—Queensland Mining Journal, February, p. 64.

Oil Refinery in the Punjaub.—Engineer, February 24, p. 219.

Base Metals.

The World's Tin.—Compressed Air Magazine, February, p. 35.

Economics.

Decimalising Standard Weights and Measures.—Iron and Coal Trades Review, February 24, p. 275.

F.B.I. on Costs of Production.—Electrical Review, February 24, p. 253.

Functions of Management.—Colliery Guardian, March 3, p. 543.

Union Practice and Policy in American Coal Mines.—Iron and Coal Trades Review, March 3, p. 316.

The Dispute in the Engineering Industry.—Electrical Review, March 3, p. 289.

Transport.

Railways and Road Traffic.—Iron and Coal Trades Review, March 3, p. 319.

The postponed twenty-sixth annual general meeting of members of the Geological Society of South Africa will be held in the Main Hall, 1st Floor, Scientific and Technical Club, 100, Fox Street (between Rissik and Loveday Streets), Johannesburg, on Monday, 3rd April, 1922, at 8.15 p.m. Business: (1) To receive and consider the annual report and statement of accounts for the year ending the 31st December, 1921; (2) to elect twelve members of Council in place of Messrs. A. L. du Toit, A. L. Hall, H. S. Harger, G. G. Holmes, J. G. Lawn, H. B. Maufe, H. S. Meyer, E. T. Mellor, P. M. Newhall, A. W. Rogers, D. Wilkinson, and R. B. Young, who retire under the rules of the Society; (3) to elect a president, two vice-presidents, and honorary secretary for the ensuing year; and (4) to elect an auditor for the ensuing year. Dr. S. J. Shand, the retiring president, will deliver his presidential address.

Sir Ernest Oppenheimer has left for the Cape.

* * *

Mr. P. L. Flanagan has been elected a member of the Committee of the Johannesburg Stock Exchange.

NOW READY.

THE S.A. MINING YEAR BOOK

1921—22.

By S. R. POTTER.

The Standard Reference Work on South African Mines.

Price 21/- net. Post free 22/6. 250pp. In Cr. Folio, Cloth, Gilt Lettered.

Obtainable from the Office of this Paper or from Argus (S.A.) Newspapers, Ltd 82-85, Fleet Street, London, E.C. 4.

A Recognised Indispensable Work of Reference.

For Mining Investors, Mining Engineers, Mine Managers, Bankers, Stockbrokers, Solicitors or anyone interested in the Mining Industry.

A RECORD OF INFORMATION concerning Mining Companies operating in all parts of South Africa, Gold, Diamond, Copper, Tin and other Mines, Collieries, Exploration, and Mining Investment Companies.

Data Twelve Months ahead of those in other Works of Reference.

Industrial Statesmanship.

AN OBJECT LESSON FOR THE MINING INDUSTRY.

Commenting on the general strike and the accompanying revolt, we wrote in a recent issue:—" It is significant that the printing trades successfully resisted the efforts of the agitators to enlist the workers in the mad adventure of a general strike. The reason, we understand, is to be found in the smooth working of the Industrial Council, composed of practical printing works managers and men who are wont to resolve their differences in common council." It may be that here is a valuable practical object-lesson for the mining industry, and that in some similar form of industrial council, consisting of practical mine managers on the one hand, and working miners on the other, is to be found the best ultimate solution of the differences between mines and men on the Rand. In the following we are enabled to give a brief sketch of the history and function of the Printing Trades National Industrial Council.

In the recent general strike on the Rand the printing trades did not participate. That egregious body, the Augmented Executive, did appeal to the printers to come out, but the latter replied that they had entered into an agreement with the masters which they were not disposed to ignore. The result was that in a time of turmoil and chaos, the printers set a unique example of level-headedness and loyalty to their word. The reason for this is to be found in the statesmanlike organisation of the printing trade in South Africa.

History of the Organisation.

It seems that in each important centre there is a Master Printers' Association, and a few years ago a Federation of Master Printers was set up with which the various local Associations are affiliated. In addition, the Newspaper Press Union, which is really a Newspaper Proprietors' Association, has been in existence for a great many years, and is the most representative employers' body in the printing and newspaper industry. The Federation of Master Printers and the Newspaper Press Union decided to amalgamate to the extent necessary to enable joint action to be taken in regard to all industrial matters. This step arose out of an important National Conference of employers and employees, which took place in Johannesburg in November, 1919. At this Conference a National Agreement governing wages and other conditions of labour was concluded, and it was decided to set up a National Industrial Council equally representative of employers and employed for the printing and newspaper industry in South Africa and Rhodesia. The first members of the National Industrial Council are: The Federation of Master Printers, South Africa, the Newspaper Press Union of South Africa, the South African Typographical Union. The constitution of the Industrial Council contains some interesting features, the chief one being provision for arbitration as the ultimate resort for the settlement of disputes. During the year 1920 three Executive Council meetings were held, two in Johannesburg and one in Capetown, and two full Council meetings, the first in Johannesburg in March and the second at Capetown in Decemebr. The proceedings were marked by a very big improvement in the relations between employer and employee, and in the March meeting the difficult problems of wages and hours were successfully solved. The wages were increased to what was considered to be a fair payment in relation to the cost of living as disclosed by the official figures issued from the cost-of-living statistical department. Provision was further made for the automatic revision of wages coinciding with any change in the cost of living figures exceeding 5 per cent. over the previous period. The signatories of the National Industrial Agreement were: The Newspaper Press Union of South Africa, the Federation of Master Printers of South Africa, and the South African Typographical Union. The Council consists of 26 members, 13 representing the employers' associations and 13 the employees.

Merits of the Scheme.

It is safe to say that the establishment of the Council has been of incalculable value to the printing industry. The keynote of the Conference has been one of mutual confidence, and there has been throughout a genuine attempt to reconcile opposing interests, which have often been found after discussion not to be in opposition at all. The Council has so far been highly successful, and it is evident that so long as it continues it will have plenty of useful work to do. From those in a position to judge we are assured that the various meetings have been distinguished for the admirable manner in which the case for both sides has been presented. The printing trade, of course, possesses problems peculiarly its own. It does not follow that methods which have been successful in settling its differences will be successful in other industries. But the fact that those methods have stood the strain of recent events invests them with unusual interest. At a time like the present, when the relations between masters and men are again in the melting pot on the Rand we cannot afford to neglect the study of such an object-lesson in agreement between employers and employed.

Kenya Mining Law.

A committee has been in session during the past month (on the nomination of the Kenya Legislative Council) to review the local mining laws. A correspondent of the *East African Standard* deems that the first essential to success in the development of the mineral resources is a comprehensive geological survey of the Colony; also " in order of merit, the following amendments to the existing Mining Ordinance, viz., the abolition of the sole prospecting licence; the restriction of all company flotations to an allotment not exceeding one-third of stock and cash to the vendors and promoters (thus restoring the shattered confidence of a timid public). Limiting also the staking of claims per individual to, say, five in any particular group. Always provided, however, that when he has duly performed his assessment work on these five claims, he is at liberty to locate a further one or five as he may deem expedient. Fixing the assessment work per claim per annum at, say, 10 feet solid rock—shaft or tunnel—and 50 feet surface diggings; and especially allowing the individual, or company, to perform all this work on any one of a group of five claims, so insuring the intelligent and perchance commercially successful development of a pukka mine. These are the crying necessities, and for the rest, the committee could not do better than adopt British Columbia Mining Laws intact."

When communicating with Advertisers
kindly mention the
SOUTH AFRICAN MINING AND
ENGINEERING JOURNAL.

Finance and Information for Investors.

AN EXAMINATION OF BALANCE SHEETS AND REPORTS—DATA FOR SHAREHOLDERS.

In response to the request of numerous readers we have commenced a new feature of the journal. In these pages we shall endeavour to compress reviews and criticisms of balance sheets, to examine Government, Municipal and other loans, to note dividend declarations, to analyse new prospectuses, and to examine the financial results and prospects of mining, commercial and banking companies concerned with trade, industry and finance in the Union and Rhodesia.

Anglo-American Corporation.

In announcing that the shares of the Anglo-American Corporation of South Africa, Ltd., have been introduced on the New York "Street" Market, an American exchange says that a prominent group of American bankers has obtained a substantial interest in the corporation, and Messrs. E. R. Stettinius and Thomas Cochran, both of J. P. Morgan & Co., are identified with the New York committee.

* * *

Apex Finances.

The net profit earned by the Apex Mines last year was £27,493, including an amount of £4,244 sundry revenue. The balance carried forward from the previous year was £34,129, giving a total of £61,622, which was dealt with as follows: Interim dividends Nos. 30 and 31 of 5 per cent. each, £15,000; Union Government taxation, £2,682; appropriated for extension of plant, etc., £4,705; balance unappropriated, £39,235. The output was 189,349 tons, a decrease of 16,086 tons as compared with the year 1920.

* * *

State Revenue from Mines.

In the course of his annual report, the Commissioner for Inland Revenue says that under the head of State Ownership, Gold Mines, the amount collected during the year April 1, 1920, to March 31, 1921, was £1,108,511, of which £120,090 represents the Government's share of Bewaarplaats. This shows an increase of £272,706 over the receipts for the year ended March 31, 1920, and is due to the premium on gold. "No new leases have been entered upon during the year. There are now eight in existence, as detailed in my report for 1918-19. As regards bewaarplaatsen, the amount received, exclusive of the sum of £42,280 included in the receipts from the Government Gold Mining Areas, was £165,741, of which £87,931 has been paid out to the registered owners. The Government's share is £120,090, which has been duly credited to the Loan Account under the provisions of Section 3 (d) of the General Loans Consolidation and Amendment Act, No. 22 of 1917. The number of bewaarplaats leases in operation at March 31, 1921, was 13. This shows a reduction of one on last year. During the year the Wolhuter Gold Mines, Ltd., and the Robinson Deep, Ltd., paid the final instalment of the ten years' annuity due by them, and a first and final payment was made by the New Kleinfontein Company, Ltd. Diamond mines: The amount collected during the year ended March 31, 1921, was £799,797, being £71,940 more than last year. Tin mines: No amount was received under this head during the year ended March 31, 1921, due to the fall in the price of tin. Other mines: The amount collected during the year ended March 31, 1921, was £4,332. Licences and Mynpacht Dues: The revenue received under this head during the year ended March 31, 1921, amounted to £272,279, showing a slight decrease on last year. Export Duty on Diamonds: The Export Duty collected during the year ended March 31, 1921, amounted to £810,463."

The South African Money Market.

During the War, loans could not be raised overseas, and the new capital required for South African purposes was subscribed locally. Owing to the high prices obtained for local products and war expenditure generally there was a large surplus of free capital in the Union. Government and municipal loans for large amounts were floated at comparatively low rates of interest, *e.g.*, Capetown, borrowed largely at 5 per cent. (and re-invested, in London, sums not immediately required, at 6¼ per cent. and 6½ per cent.) The money absorbed by Government and municipal loans did not adversely affect trade conditions, for the rate of interest on mortgages remained stationary at about 6 per cent. It was not until some time after the Armistice that the local money market became affected, and the rate of interest on Capetown loans was increased first to 5½ per cent. and then to 6 per cent., the Government also being compelled to raise its loans at 6 per cent. During the latter half of 1921 Kimberley borrowed at 7 per cent., and a few weeks ago Durban raised a loan at 6½ per cent., while the rate of interest on mortgages has risen from 6 per cent to 6½ per cent. and 7 per cent. and even 8 per cent. Before the end of 1921 it was evident that there was a severe shortage of free capital in the Union, and that, although the value of money in London was falling steadily, the local market was not benefiting from the increase in free capital overseas. The local shortage of free capital is not likely to be met by commercial transactions, and it appears to be the duty of large borrowers to withdraw from the local market and to introduce new capital overseas. Not only is it their duty on broad economic grounds, but also it will be to their financial advantage, because they can borrow more cheaply. Government has already seen the necessity. Ten million pounds were raised in London before the end of 1921. The issue of the Government 6 per cent. local loan was withdrawn at the end of January last, and following upon the fall in the Bank of England rates to 4½ per cent., the rate of interest on local Treasury Bills has been reduced from 5½ per cent. to 5 per cent., the local banks at the same time reducing their rates of interest on fixed deposits by ½ per cent.

* * *

Coronation Syndicate.

Elsewhere in this issue appears an abridged notice of the extraordinary general meeting of this company to be held in Johannesburg on April 6th. After the completion of the scheme of reconstruction the London Committee will be strengthened by the following gentlemen: Lieut.-Colonel F. E. Fremantle, M.P., Bedwell Park, Hatfield, Herts; Sir Herbert Trustram-Eve, K.B.E., of Messrs. J. R. Eve and Sons, Westminster, and Mr. H. C. Waldrond, chairman of Messrs G. T. Symons and Co., Ltd., London. Drilling operations at the company's "D" borehole on Luipaardsvlei 10 are proceeding very satisfactorily.

TO LET.

MODERATE RENTAL TO APPROVED TENANT.

Cottage, South Coast, Natal. Just completed. Built of concrete. Three rooms; large verandahs; glorious view; 200 yards from sea; safe bathing; 400 yards from railway halt.

Apply, "L,"
Office of this paper.

The Week in the Sharemarket.

MODDER DEEPS LOWER—WIT. DEEPS HIGHER—ENEMY SHAREHOLDING QUESTION AGAIN.

The past week has shown London still holding aloof, and consequently lower prices locally and in London. Just before going to press a breakdown of the Modder Deep haulage gear is reported. This, we are informed, will slightly affect operations for about a month, and the shares in consequence dropped to 39s. We would point out to shareholders that this temporary interruption can in no way reduce the intrinsic nature of these shares. Again the enemy share bogey is before us, and it is reported that negotiations are shortly to take active shape. Meanwhile prices are hardly likely to advance much.

On Thursday morning one transaction in Consolidated Diamonds at 14s. 3d. and another in Daggafonteins at 2s. 9d. were the only bargains reported before High 'Change. On the Call business continued poor, and prices showed a sagging tendency, the great majority of gold shares being marked down further to a slight extent. Wit. Deeps, however, were a marked exception, and were 1s. higher at 10s. buyers after sales at 9s. 9d. Brakpans were firm at 46s. bid. Nothing was done in Diamonds or Tin Shares, or indeed in any Industrial Shares except Pretoria Cements, which were firm and slightly higher at 41s. and 41s. 3d. sales. Union Loans were steady in quotation without business.

	Fri. 24th.	Sat. 25th.	Mon. 27th.	Tues. 28th.	Wed. 29th.	Thur. 30th.
Anglo-Amer- Corp.	20 0*	19 6	19 9	20 0	19 9*	19 9
Apex Mines		6 6†	5 9*		6 0*	5 9*
Bantjes Cons.	6 4½*	6 4*	6 4*	6 4*	6 4*	6 4½
Brakpan Mines	—	45 0*	45 3*	45 6*	45 6*	46 0*
British S.A.	11 6*	11 6*				
Bushveld Tins	—	—	0 9†	0 9†	0 9†	0 9†
Cinderella Cons.	2 6	2 3*	2 6*	2 6	2 3*	2 3*
City and Subs.	2 3	2 2*	2 3†	2 2*		2 2*
City Deeps	40 6*	40 0*	40 3*	40 6*	40 6*	40 0*
Clydesdale Colls.	19 9*	—	19 9*	19 9*	19 9*	
Con. Diamonds	14 0	13 3	13 7½	14 3	14 3	14 0
Con. Investments	23 0*	—		23 0*		—
Con. Langlaagtes	14 9*	—				14 0*
Con. Main Reefs	9 3*	9 0*	9 0	9 0*	9 0*	9 0*
Con. Mines Select.	11 3*	10 6*	10 9*	—		10 6*
Coronation Colls.		30 0*	30 0*	30 0*	30 0*	30 0*
Do. Freeholds	—	—	0 6*	0 6*	0 6*	0 6*
Do. Syndicates	4 3*	4 4	4 3*	4 3*	4 3*	4 3*
Crown Diamonds	5 6*	5 6	5 6*	5 6*	5 4*	5 4*
Crown Mines	—	34 0*	34 6*	35 6*	35 6*	35 0*
Daggafontein Mines	2 7*	2 9†	2 8*	2 9	2 9	2 8*
E.R. Coals	1 9†	1 8*	—	1 9†	1 6*	1 9†
E.R. Deeps	0 9*	0 9*		—	0 9*	0 9*
E.R. Minings	10 0*	—	10 0*		10 3*	
E.R. Props.	7 0	6 9*	6 3*	6 6*	6 6*	6 6*
E.R. Debentures	£80*		£82*	£82*		£85†
Eastern Golds	0 6*	—				
Ferreira Deeps	—	—	7 0			—
Frank Smith Dmds.	3 9*	3 9	3 11	3 9*	3 9*	3 9*
Geduld Props.	52 3	52 3	51 9*	53 0	52 6*	52 0
Geldenhuis Deeps	—	—	5 6*			5 6*
Glynn's Lydenburgs	8 0*		8 6*	8 6a	8 6†	8 9*
Govt. Areas	77 0*	77 0*	77 3*	77 0*	77 0*	77 0
Hume Pipes	11 6*	11 0	10 6*	10 6*	10 6*	10 6*
Knight Centrals	4 4*	4 5*	4 2*	4 2	4 4	4 2*
Lace Props.	7 9*	7 9*		7 9*	7 7½*	7 6*
Leeuwpoort Tins	6 9*	6 6*	6 10*	6 9*	6 9*	
Lydenburg Farms	4 9*	4 9*	4 9*	4 9*	4 9*	—
Middelvlei Est.			1 3*	1 3*	1 3*	1 6*
Modder B.'s	25 0*	25 0*	25 0*	25 6*	25 6	25 3
Modder Deeps	41 0	40 6	40 6*	41 6	41 0*	40 0
Modder Easts	8 1½	8 0	8 2	8 1	8 9*	7 9
Natal Navig. Colls.	28 6*	28 6*	28 0*	28 6*	29 0	
National Banks		220 0†	220 0†	220 0†	220 0†	220 0†
New Eland Dmds.	27 0†	24 0*		27 0†	—	
New Era Cons.	5 9*	5 10½	5 9*	5 9*	5 9*	5 10*
New Geduld Deeps.	1 4*	1 4*	1 4*	1 4*	1 4*	1 4*
New Kleinfonteins.	5 9	5 6*	5 9*	5 6*	5 6*	5 9
New Modders	68 0*	68 6	68 0	68 0		66 6*
New Primrose	4 8*	4 6*	4 8*	4 9*	4 6*	
New Unifieds	—	3 6*	3 8*	3 8*	3 8*	—
New State Areas	29 0†	28 3*	28 3	28 3	28 1½	27 6
Nigels	5 6*	5 6*	—	5 3*	5 3*	5 0*
Nourse Mines	11 6*	11 9	11 4½	11 9	11 7½	11 0*
Pretoria Cements	41 0	40 9*	41 3	40 6*	40 6*	41 3
Princess Estates	1 1*	1 1*	1 3†	1 3†	1 1*	1 1*
Rand Collieries	—	—	—	0 9*	—	—
Rand Mines	—	—	—	—	—	37 6*
Rand Nucleus	—	—	—	1 1*	1 1*	1 1*

	Fri. 24th.	Sat. 25th.	Mon. 27th.	Tues. 28th.	Wed 29th.	Thur. 30th.
Randfontein Central	10 6*	10 6*	10 6*	10 6*	10 6*	10 6*
Do. Estates	16 1½	15 6	15 6*	15 6*	15 7½	15 3*
Rouxville Diamonds	1 5*	1 5*	1 5*	1 5*	1 5*	1 5*
Roberts Victors	9 0*	9 0*	9 0*	9 3*	9 0*	9 0*
Roodebergs	3 9†	3 9†	3 3*	3 3*	—	—
Ryan Nigels	2 6*	—	—	—	—	—
Simmer and Jacks	3 3b	3 6†	3 0*	3 3*	3 6	3 3b
S.A. Lands	4 3	4 3	4 1	4 0*	4 0*	4 0*
Springs Mines	37 0*	37 0	37 0	—	37 0*	36 6*
Sub Nigels	11 0*	11 0*	10 9*	—	11 0*	11 3
S.A. Alkali	13 0		13 9*	13 9*	—	13 0*
S.A. Townships	—	8 6	8 3*	8 3*	8 3*	8 3*
Transvaal Lands	—	15 0*	16 0†	15 0†		
Trans. G.M. Est.	7 9*	7 9*	8 3	—	8 3†	7 6*
Transvaal Silvers.	19 9†	18 6*	18 0	17 0	17 9	17 0*
Tudors	0 9†	0 6*	0 9†	0 9†	0 9†	0 6*
Union 5 per cent.	£102¼	£102¼*	£102¼*	£102¼*	£102¼	£102¼*
Van Dyk				—	0 6*	1 0*
Van Ryn Deeps	60 9*	60 9	60 6	60 6*	61 0	61 0
Village Deeps	7 6*	8 0b	8 0*	8 9*	8 0*	8 9*
West Springs	8 3	8 0	8 0	8 0*	8 0*	8 2†
West Rand Cons.				2 0*	—	2 0*
Western Rand Est.	3 9	3 6*	3 6*	3 6*	3 6*	3 6*
Witbank Colls.	35 0*	37 0b	35 0*	35 0*	35 0*	35 6*
Witwatersrands		13 0†	12 0*	13 0†	12 0*	—
Wit. Deeps	8 0	8 0	8 0	9 0	9 0	9 9
Zaaiplaats Tins	2 3*	2 9*	2 9†	2 6*	2 6*	2 6*

* Buyers. † Sellers. a. Odd lots. b. Ex London.

Disposal of Enemy Property.

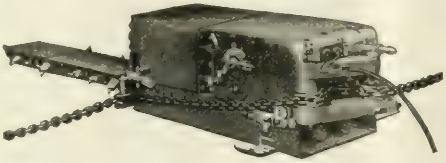
An agreement has been come to between the Governments of the Union of South Africa and the United Kingdom under which all enemy shares, etc., in companies incorporated in the Union will be dealt with by the Union Custodian of Enemy Property, whilst the Public Trustee (United Kingdom) will deal with all shares, etc., in companies incorporated in the United Kingdom. The Public Trustee is transferring to South Africa all scrip, etc., and other records which he has in his possession in connection with companies incorporated in the Union, whilst the Union Custodian is making a similar transfer to the Public Trustee in connection with companies incorporated in the United Kingdom. The Transvaal Chamber of Mines has been advised by counsel that, so far as registered shares are concerned, the agreement should be recognised by companies, but with regard to bearer shares and bearer debentures, together with the relative coupons issued by South African companies which are not actually situate within the Union, the agreement is not in accordance with the law, and the Chamber has therefore decided to resist the claim made by the Union Custodian for the issue of new title to such bearer shares, bearer debentures and coupons.

ASBESTOS
PROPERTIES and FIBRE
ARE PURCHASED BY
AFRICAN ASBESTOS MINING CO., LTD.
P.O. Box 504, BULAWAYO
Telegrams : "Safasco," Bulawayo Phone No. 356
Johannesburg Correspondents :—HUGGINS & CO., LTD.
Consolidated Building JOHANNESBURG
Telegrams : "Tarbros" P.O. Box 5105 Phone 574

THIS IS A SULLIVAN C.E.9 LOW VEIN COAL CUTTER AND POWER CAR WITH TRAILER-TYPE REEL.

AND

THIS IS THE C.E.7 IRONCLAD SHORTWALL COAL CUTTER



MADE BY THE SULLIVAN MACHINERY COMPANY, CHICAGO.

"THE ARISTOCRAT OF PORTABLE BELT CONVEYORS."
EITHER OIL OR ELECTRICALLY DRIVEN.

MADE BY THE BROWN PORTABLE CONVEYING MACHINERY COMPANY, CHICAGO.

FOR FURTHER PARTICULARS APPLY TO:—

THOMAS BARLOW & SONS (S.A.) LTD.

DURBAN.
P.O. Box 1011. Tel. Add.: "SHIPMENTS."
'Phones : .. .. 1, 1965, 2322, 2460.

JOHANNESBURG.
P.O. Box 6901. Tel. Add.: "SHIPMENTS."
'Phone .. .. 6503.

ENGINEERING SECTION.

Electrical Research: Latest Progress.

The quarterly Review of Progress which has been issued by the British Electrical and Allied Industries Research Association contains a record of the progress made recently in the several important researches conducted by this body. The work of the Association is carried out by committees, each dealing with a different section of the work, the sections now number 11. Section A (fibrous insulating materials) covers research on fabrics (untreated and treated), papers, fibres and boards, varnishes, etc. Specifications of the methods to be adopted in tests standardised for every kind of insulating material. The clauses covering mechanical tests are now under experimental proof; but the development of tests for electric strength has indicated the desirability of a wider series of tests applicable to all materials with a fibrous base, and even of a series of tests standardised for every kind of insulating material. The study of untreated papers has yielded results shortly to be published as a document covering the methods of examination and the definitions of the materials and terms employed. Specifications have also been drafted for the study of pressboard, vulcanised fibre, varnishboard, etc., and are undergoing experimental verification. A full report of these researches is in preparation. New work in section B includes the formation of a committee for research in varnishes. A comprehensive publication has been prepared of the test methods developed by the Association for the investigation and improvement of composite insulating materials. The committee of section C reports the completion of arrangements for porcelain research at Manchester University and the National Physical Laboratory. The results of the work done by section D on mica and micanite for commutators and condensers will shortly be available as a report. The manufacture of micanite is under consideration, and co-operation is invited from manufacturers and users. The specification for insulating oils, prepared by section E, and submitted to the B.E.S.A., met with substantial approval, and a final draft is under consideration. Work continues on thermal transference, specific and latent heats, etc. (at the National Physical Laboratory), and on the action of catalysers and the analysis of deposits. In section F (conductors) the intermittent and overload ratings of buried cables continue to receive attention. The research on overhead lines has progressed as far as deflection and performance tests of standard "A" and "H" poles, inserted to various depths. This research is in the report stage, and the tests of long overhead lines are being pushed. Section G (electric control apparatus) deals with the phenomena of switching and arcing, mining switchgear, heavy duty fuses, direct current circuit breakers, and the resistivity of joints and contacts. The investigation of the phenomena of switching and arcing has involved as a preliminary the determination of the short circuit characteristics of a large alternator at Carville power station, the development of devices for predetermining the instant at which a circuit is made or broken, and special apparatus for controlling the power factor and energy flow. An adjustable switch has been designed and constructed. Pending the completion of arrangements on the site of the test, there has been made a critical survey of all available data on switching and arcing. The tests on mining switchgear deal chiefly with the pressures developed in closed chambers; satisfactory workshop tests have been devised. The investigations on heavy duty fuses have progressed, with the aid of tests on a large battery under short circuit conditions, to a point where test methods can be formulated. It yet remains to test makers' samples, of which a complete set has been collected. Preliminary tests of direct current circuit breakers have disclosed unexpected difficulties in the determination of the physical constants of shorted circuits. When these have been overcome, it is hoped to secure the loan of apparatus suitable for large scale tests, failing which it will be necessary to fall back upon the special apparatus built for the researches on switching and arcing. A close study has been made by the committee of section K of the whole question of the production in this country of synthetic resins. A report is expected shortly. The activities of section L, formed to deal with dielectrics in general, have resulted in an extensive programme of research on dielectric losses to be carried out in co-operation with the National Physical Laboratory. The experimental work on the thermal resistivity of dielectrics in sheet form is proceeding; test methods for built-up insulation have been developed, and are to be used in investigating various methods of construction. The researches on condenser corrosion and on turbines, carried out in co-operation with other research associations, have reached the report stage. The report on the corrosion of metals is a most valuable résumé of several years' investigations, and should go far to remove much of the guesswork hitherto inevitable in condenser maintenance and design.

The Mines and New Patents.

At the end of 1920 ten applications, to which the Transvaal Chamber of Mines has entered opposition were still *sub judice*. In three cases the applications were amended to meet the requirements of the Chamber; in four cases the applications were abandoned; in two cases the oppositions were withdrawn, while the remaining application was outstanding. During 1921 199 applications were reported upon by the Patents Committee. It was decided that no action should be taken in 177 cases, and opposition was entered to the remaining 22. In six cases the applicants amended their specifications to meet the Chamber's objections; in three cases the Chamber withdrew its opposition; in three cases the applications were abandoned, and the remaining ten cases were outstanding at the end of the year.

BLUE ASBESTOS
FOR SALE.

20 to 25 tons monthly from end of April.

Prices and samples from:
E. G. BRYANT,
Box 11,
PRIESKA.

The Trade Outlook.

H.M. Senior Trade Commissioner in South Africa (Mr. W. G. Wickham), who has recently concluded a tour of the industrial and business centres of the United Kingdom, has contributed the following notes upon recent market conditions in South Africa:—

The demands of a market such as South Africa fall naturally into two groups according to the method of payment, that is to say, whether they come under review as capital expenditure, or are met from revenue.

As regards the latter group, two factors give hope of improvement, namely, the reduction of stock in merchants' and retailers' hands, making it possible or even necessary to implement at least by cautious and hand-to-mouth indenting, and in the second place, the steadying on lower levels of prices which is tending to widen demand from the consumer. There is, however, ample evidence that merchants are operating cautiously to the point of timidity, and that their efforts are directed towards keeping cheap goods off the market until high priced stocks are cleared almost more than to stimulating demand among the consumers. The view that the stocks imported in 1920 were not so heavy as the majority of merchants, misled by the huge money value of importation, believed, appears to be borne out by the renewal of indenting in most lines during the last six months. The improved position as regards ordinary commodities has been assisted materially by the recovery of the wool market. This, by a reduction of the accumulations in South Africa, has eased supply of money and helped credit, and has tended to give greater cheerfulness to the general outlook.

Turning now to the class of business which depends on capital outlay, we find an entirely different state of affairs. Capital expenditure is involved in the starting of all industrial and mining concerns, and in the undertakings of public bodies and Government Departments, and in the building trade. Manufacturers of all classes of machinery and plant such as come into these categories need, in order to keep their works occupied, either a steady flow of orders or, alternatively, sufficient confidence in the stability of prices to justify manufacture for stock of all standard goods for which orders are bound to come before long.

Those, on the other hand, who direct and control the expenditure of capital on behalf of shareholders or taxpayers must feel sure in the first place that the goods required will not in a short time be procurable at considerably lower prices, and in the second place, that the return demanded for the loan of money is not in excess of what will be accepted later on if patience is exercised.

Shipments of machinery to South Africa in 1921 have been considerably heavier than in 1920, but this, unfortunately, is due rather to the very serious delays in completing orders for machinery urgently needed after the War.

* * *

Automatic Furnace Control.

The furnace may be said to be almost the first industrial appliance ever produced, since it is in furnaces of some sort that metals are melted. And the beginning and the end of the art of the furnace lies in controlling temperature. During recent years, especially since the development of electric furnaces, there has been remarkable progress in the accuracy of this control, and the summit appears to have been reached in an appliance recently displayed at a scientific exhibition in London, England. This instrument is intended not only to keep a furnace at a certain temperature, but to raise or lower the temperature in accordance with any pre-arranged programme. In general appearance it is similar to a recording barometer, the pen tracing out a curve which rises and falls according to the temperature. A metal plate cut to a certain shape is laid over the chart, and if the temperature falls too low the pen comes into contact with the metal and completes an electrical circuit which operates mechanism arranged to raise the temperature of the furnace. Contrariwise, when the temperature gets too high the pen comes into contact with another part of the metal actuating mechanism for reducing the temperature. The curves of the metal thus determine the fluctuation in the furnace temperature.

* * *

Still Improving the Locomotive.

The locomotive, now about a hundred years old, was a British invention, and to-day British engineers continue to introduce improvements in its design. Over forty years ago a device known as the "exhaust steam injector" was brought out. Its purpose is to use the power in the exhaust steam from the cylinders to force water into the boiler. The first injector of this kind was able to do its work against a pressure in the boiler of 70 lb. per square inch. Later it was improved so as to feed at 120 lb., and for higher pressures it was necessary to call in the aid of live steam from the boiler itself. Lately, however, a British firm invented a modification by means of which the injector can work against a pressure of 150 lb. per square inch with one pound

THE HYDROGEN, OXYGEN & PLANT CO., Ltd
(REGISTERED IN ENGLAND).
99, PARK ROAD, NEWTOWN, JOHANNESBURG.

Manufacturers of .. .. Hydrogen and Oxygen in bulk for Industrial and Medical purposes. .. ..

Sole Representatives and Stockists for the
Alloy Welding Processes,
Limited,
LONDON.

Manufacturers of .. .. Electrodes and Plant for Oxy-Acetylene and Electric Welding purposes. .. ..

General Managers in S.A. :—
Messrs. DOWSON & DOBSON, LIMITED, JOHANNESBURG.

ALL COMMUNICATIONS TO BE ADDRESSED TO THE WORKS.

'Phone 3053. - - - **Telegrams:** "HOPCO." - - - P.O. Box 5404.

of exhaust pressure, thus effecting a great economy in live steam. This improvement is due to the use of an additional nozzle which brings the steam into more effective contact with the stream of water. In practice the amount of live steam required when this new device is fitted is nearly half what it was formerly and amounts to only 2½ per cent. of the total steam produced by the boiler.

* * *

The Mystery of "Roaring" Rails.

On many of the railway systems of the world the phenomenon of "roaring rails" has been a too familiar trouble to engineers. The surface of the rails developed ridges at regular distances of an inch or so, and these corrugations led to excessive noise and vibrations. On electric tramway systems the same trouble appeared in even greater degree; frequently the noise was so excessive that the rails had to be ground flat at great expense—only to reveal fresh corrugations as soon as the traffic was resumed. All sorts of explanations were offered and for a long time the precise cause of the trouble remained a mystery. Now the problem has been settled by a series of experiments carried out by a committee of British experts on a tramway subway in London, where the rails and track could be altered freely so as to test the various explanations put forward. The conclusion reached is that vibration has nothing to do with the case and that the real cause lies in the action of a very heavily loaded wheel running along the rail. This action makes the material of the rail surface "flow" into waves or corrugations very much as an ordinary road surface flows into waves under the action of a steam roller. The remedy therefore lies in the use of harder rails and, where possible, of larger wheels.

The Position of the Falcon.

The Falcon report for the year to June 30 last states that £30,128 debenture stock was redeemed, reducing indebtedness on this account to £67,963, which falls due for repayment on July 31, 1922. In addition, £50,000 debenture stock issued as security in respect of loans is still outstanding, indebteness on loan account being £5,000. Development work during the year amounted to 3,453 feet, making a total of 38,869 feet. Ore reserves at June 30, 1921, were estimated at 569,000 tons, valued as follows: value per ton taking gold at 4s. 9d. per dwt. and copper at—

	£50 per short ton.	£58 per short ton.
Gold, 1.7 dwt. ... ... Copper, 1.92 per cent.	41s. 6d.	44s. 7d.

In addition, silver averages about 9 dwt. per ton of ore. Decrease in ore reserves, as compared with previous year, amounts to no more than 40,373 tons, which is largely accounted for by recovery of ore previously written off. Of these reserves, 374,000 tons have been broken down and are lying in the stopes. Ore treated, 184,500 tons, producing 3,139 tons blister copper, estimated to contain: fine copper, 3,086 tons; fine gold, 35,960 ounces; fine silver, 66,684 ounces, which have yielded £416,735, equal to 45s. 2d. per ton of ore treated. Working costs were £400,343, or 43s. 4¾d. per ton of ore treated, leaving mine profit, exclusive of London expenditure, £16,392, equal to 1s. 9¼d. per ton of ore. In addition, revenue of £3,337 has been earned, mainly from treatment of outside ore in company's smelter. Plant has run almost continuously, 15,825 tons of ore more than in previous year having been treated, with increase in production of 380 tons copper, 5,018 ounces gold, and 7,872 ounces silver, but notwithstanding this increase realisation shows a considerable falling off in value, due to low price for copper prevailing during period under review. Increase in working costs of 2s. 3½d. per ton is mainly due to full effect of increased rates for wages, railway freights, coal and royalty. Grade of ore treated is still unfavourably affected by conditions in mine, resulting from various falls of ground, as a consequence of which the average value treated has generally continued low, and allowance is made for this factor in calculation of average value of ore reserves. Results show working profit £15,754, which, after debiting debenture and loan interest, British and Rhodesian income tax, is converted into a debit balance of £15,000, deduction of which from £196,667 brought in leaves balance at credit of £180,867 to carry forward. This amount is employed in company's business, and is represented by stores, broken ore in stopes, development, etc. A supplementary report to December 31 last shows:—Ore treated, 94,223 tons; output fine copper, 1,551 tons (2,000lb.); output fine gold, 18,162 ounces; output fine silver, 33,921 ounces; estimated value of output, taking copper at £58 per short ton, gold at 95s. per ounce, and silver at 3s. per ounce, £181,353; working costs (averaging 39s. 9d. per ton of ore treated), £187,177. No development work other than that necessary for recovery of ore affected by falls of ground and cementation, has taken place. A further liability for income tax, together with balance of previous year's assessment, amounting altogether to £24,635, is now due, and debenture stock £67,963 falls due for repayment on July 31 next. Unless, therefore, a material rise in price of copper should take place within next few months it may be difficult to make due provision of funds required for general purposes and impossible as regards redemption of debentures.

INVESTORS' DIARY.

Meetings will be held in Johannesburg unless otherwise stated:—

April 6.—Coronation Syndicate.

May 23.—S.A. Land and Exploration Co., 12 noon.

May 29.—West Springs, 11 a.m.; Daggafontein Mines, 11.30; Springs Mines, 12 noon; Brakpan Mines, 2.30 p.m.; Rand Selection Corporation, 3.15 p.m.; New Era Cons., 3.45 p.m.

June 3.—Transvaal Coal Corporation, 10.30 a.m.; Anglo-American Corporation, 11 a.m.

May 26.—Modder Deep Levels, 12 noon; Geduld Proprietary Mines, 3 p.m.

June 8.—New Primrose, 11.30 a.m.; New Unified, 11.45 a.m.; Langlaagte Estate, 12 noon; Randfontein Central, 3 p.m.; Randfontein Estates, 3.30 p.m.

June 9.—Consolidated Langlaagte Mines, 10.30 a.m.; Witwatersrand G.M. Co., 10.50 a.m.; New State Areas, 2.40 p.m.; Van Ryn Deep, 3 p.m.; Government Areas, 3.45 p.m.

The annual meeting of Lydenburg Gold Farms, Ltd., is called for May 16. Of the 250,000 shares of 4s. issued it is proposed to pay off 1s. 6d. per share.

Letters to the Editor.

To the Editor, S.A. *Mining and Engineering Journal*

Sir,—The Administrator desires me to refer to his letter dated the 18th instant regarding the appeal of the Right Hon. the Prime Minister, in connection with distress, and to ask that you will be kind enough to publish the fact that the Hon. the Minister of Railways and Harbours has agreed to the free carriage of goods donated to the Administrator's (Transvaal) Distress Fund, provided such goods are consigned as follows: "The Administrator's (Transvaal) Distress Fund, Johannesburg."—I am, yours faithfully,

A. E. Charter, Hon. Secretary

Administrator's (Transvaal) Distress Fund

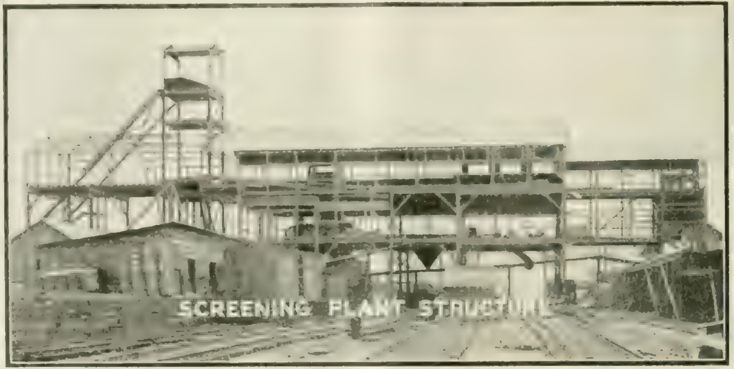
HEAD, WRIGHTSON & CO. (South Africa), LTD.,

SPECIALISTS IN

GOLD MINING PLANT, COLLIERY PLANT, BLAST FURNACE PLANT,
AND ALL CLASSES OF GENERAL ENGINEERING.

COAL HANDLING,
SCREENING and
WASHING PLANTS.

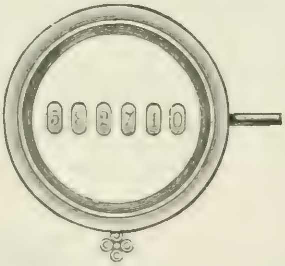
Send for particulars
of the "NOTA NOS"
Coal Washer and
"MARCUS"
Screen-Conveyors.



P.O. BOX 1034, or

65-66, Standard Bank Chambers, JOHANNESBURG.

JOHN DAVIS & SON (DERBY), LTD.



REVOLUTION COUNTERS

LIKE ALL OF THE MANY OTHER WELL-KNOWN DAVIS-MADE PRODUCTS, THIS HARDING'S PATTERN COUNTER IS THOROUGHLY RELIABLE, WELL MADE THROUGHOUT, AND BUILT TO GIVE LONG SERVICE. THE CASES ARE ROUND, THE WHEELS ARE OF PORCELAIN, AND THE FIGURES ARE BURNT IN. TWO SIZES ARE STOCKED: 5 INCH DIAMETER WITH SIX FIGURES, ROTARY OR RECIPROCATING TYPE; AND 9 INCH WITH SEVEN FIGURES, WHICH CAN BE SET BACK TO ZERO

SOLE AGENTS FOR SOUTH AFRICA:

BARTLE & COMPANY, LTD.,
Loveday House. P.O. Box 2466. 'Phone 3553. Wires: "FAGGOT."
JOHANNESBURG.
And Box 444, Kimberley. Box 1228, Durban.

Robert Heath & Low Moor, Ltd.,
Sole Manufacturers of
LOW MOOR
IRON AND RIVETS.

SPECIALITIES:
COLD BLAST PIG IRON
HAULAGE GEARS
PUMPS
WINDING ENGINES
OVERWINDING GEARS
PIT TUBS
COLLIERY PLANT AND BUILDINGS
AXLES AND FORGINGS
DROP STAMPINGS
CHILLED AND GRAIN ROLLS
CASTINGS UP TO 20 TON EACH

SOLE AGENTS IN SOUTH AFRICA FOR PRODUCTS OF
LOW MOOR WORKS:
SAMUEL OSBORN
(S.A.), LIMITED,
'Phone 4573 JOHANNESBURG. Box 3162

RHODESIAN SECTION.

Rhodesian Chamber of Mines Annual Meeting.

POSITION OF THE INDUSTRY— POINTS FROM THE PRESIDENT'S REVIEW.

The 27th annual general meeting of the Rhodesia Chamber of Mines was held in the Council Chamber of the Town Hall, Bulawayo, on March 22nd.

Sir Bourchier Wrey, Bart., president of the Chamber, presided, and in the course of his address remarked: During the year under review 5,047 gold reef claims were registered, 472 abandoned, and 7,757 forfeited, leaving 33,104 current at the end of the year. The number of gold claims registered show an increase of 276 as compared with the previous year. The registration of base mineral claims was again very active in 1921, the number registered being 15,064. The principal base minerals pegged were mica, 7,204 claims; asbestos, 4,169; and chrome ore, 2,789.

Gold Output in 1921.

The total production of gold in 1921 was 585,325 fine ounces, valued at £3,217,275, showing increases of 33,027 fine ounces and £160,726 respectively as compared with the previous year. The gold production for each province was as follows: Matabeleland, 287,770 fine ounces, valued at £1,595,444; Mashonaland, 297,755 fine ounces, valued at £1,621,831. The average value per ton milled in 1921 was 33.09s., as compared with 35.16s. in the previous year. Taking gold at the intrinsic value of, say, 85s., the average value per ton milled in 1921 works out at 26.22s., as compared with 27.01s. in 1921 and 28.26s. in 1919.

Other Metals and Minerals.

The total production of all other metals and minerals than gold in 1921 amounted to £1,503,100. The following comparative values for 1921 and 1920 are interesting:—

	1921.	1920.
Silver	£19,841	£58,178
Copper	201,341	333,111
Coal	256,815	252,220
Chrome Ore	195,360	245,378
Asbestos	795,699	459,572
Arsenic	11,263	16,510
Mica	20,747	25,153
Tin	513	661
Tungsten Ores ..	800	1,519
Diamonds	721	1,917
Antimony	Nil	219
	£1,503,100	£1,394,438

The quantity of copper produced in the two years under comparison was practically the same, 3,080 tons in 1921 and 3,108 in 1920, but the value in 1921 was £131,770 less. Asbestos, on the other hand, showed an increased value of £336,127 over 1920, although the tonnage only showed an increase of 706.

Total Mineral Yield.

The total output for 1921 of gold and other metals and minerals amounted to £4,720,375, as compared with £4,450,987 in the previous year, being an increase of £269,388. The increase is made up as follows:—

On Gold	£160,726
On other Metals	108,662
	£269,388

The grand total of the value of gold produced in Southern Rhodesia from the commencement of the industry to the 31st December, 1921, amounted to £51,501,615, and of other metals and minerals £9,383,079, making altogether a grand total value of mineral production of £60,884,694.

Dividends.

The dividends declared by Rhodesian mining companies in 1921 amounted to £663,723, as compared with £1,056,840 the previous year. The latter figure, the highest on record, was due to the gold premium and included large sums earned in the year 1919. The total declared for 1921 is the third highest on record, and was also due largely to the gold premium, which has now, however, fallen to about 10s. per fine ounce, and seems likely to gradually disappear.

Some of the Leaders of Rhodesian Mining.

The total amount of dividends declared in 1921 by Rhodesian development and miscellaneous companies was £247,806 as against £238,570 in 1920, an increase of £9,236. Taking all Rhodesian dividends together, 1921 shows a decrease of £383,751 compared with the previous year. The total cash dividends declared by Rhodesian mining companies from the commencement of the industry to 31st December amounted to £8,201,821. This figure does not take into account dividends declared by Rhodesian development and miscellaneous companies in cash or scrip amounting to over £3,800,000, nor dividends paid by local Rhodesian mining companies and syndicate, nor distributions effected in the form of return of capital.

Native Labour.

The average total number employed at the end of each month on the mines was 37,160, as compared with 36,875 in the preceding year, showing a slight increase of 285.

New Mining Regulations.

During the year the Government brought into force certain new mining regulations aimed at increasing the security of mine workers. A sub-committee of the Chamber had previously met the Inspectors of Mines and discussed the whole subject with them, and the amended regulations were the result of the meeting and had the full approval of the Chamber.

Road Councils Ordinance.

At the last session of the Legislative Council an Ordinance was passed for the purpose of establishing Councils throughout the country for road-making with powers of rating. The Chamber was at first somewhat apprehensive that the mining industry might be unduly taxed under the Ordinance, many of the mines being served by the railway, and not therefore requiring to use the main roads to any extent. Representations to this effect were made to members of the Legislative Council, and it would appear that the interests of the industry are fairly safeguarded by the terms of the Ordinance ultimately agreed upon.

Working Costs.

The present critical position of the mining industry in Rhodesia, owing to the serious decline in the value of the minerals produced, renders it imperative to reduce working costs on the mines. The mine-owners were therefore compelled to notify employees that a reduction of wages would take place as from the 1st April next. A conference with the Mine Owners' Association to discuss the reduction was asked for by the Rhodesian sections of the South African Mine Workers' and the Amalgamated Engineers Unions, and was in consequence held on the 1st and 2nd of this month, but owing to their delegates' refusal to discuss the agenda the conference closed. The schedule of reductions as forwarded to the unions will come into force as stated on 1st April. The matter of possible anomalies which it may create is meanwhile having the attention of the Mine Owners' Association.

Mr. J. G. Macdonald.

Mr. J. G. McDonald, seconding the chairman's motion to adopt the report and financial statement, said that though the mining industry was for the moment rather under a cloud, yet he hoped at no very distant date brighter days would be here.

The President said the next item was the election of the members of the Executive Committee. The retiring members, who were re-eligible, were Sir Bourchier Wrey, Colonel Sir Melville Heyman, Captain L. Ludlow, Messrs. Geo. Stewart, C. E. Kingston, John Hynd, and R. M. Nairn. There being no other nominations which should have been received prior to that meeting, he declared these gentlemen duly elected.

Mr. A. R. Thomson moved that Sir Bourchier Wrey be re-elected President of the Chamber, and that Mr. J. G. McDonald and Mr. Theo Haddon be re-elected vice-presidents. Sir Bourchier had been president of the Chamber for eleven years of its existence, and Mr. McDonald and Mr. Haddon had also had a long connection with it. All of them had served the Chamber well in the past, and he was sure they would do so in the future.

Mr. B. W. Durham seconded the motion, which was agreed to.

A well-deserved tribute to the Chamber's able secretary, Mr. Morton, was paid at the meeting.

STEEL DISCOVERY: "TEMPER BRITTLENESS" OVERCOME.

In metallurgical circles a great deal is being heard just now of a new steel, known as Vibrac, which has been produced at the Openshaw works of Armstrong, Whitworth and Co. Following on research, in which Mr. H. H. Ashdown has played a leading part, there has been developed a steel for which claims are advanced that it is the greatest achievement in metallurgy since the introduction of alloy steels. This new steel, it is held, has overcome the disease known as "temper brittleness," and thereby solved a problem which for the past ten years has baffled the minds of metallurgists throughout the world. In normal conditions of treatment, this steel is thought to be "foolproof." Vibrac is an alloy steel of the nickel chrome variety, possessing higher mechanical properties than existing steels and capable of giving a high and regular impact test. The impact value in ordinary nickel chrome steel is most erratic, and varies from 2 to 60 ft. lb. under similar conditions. With Vibrac, according to tests, a regular result of about 70 ft. lb. is obtainable with the simplest treatment. This means that "temper brittleness," which makes ordinary alloy steel unreliable in certain conditions, has been completely overcome.—"Morning Post."

CUTTING STEEL BY FRICTION.

In the cutting of steel it is usual to employ either a tool of the saw type or a cutting flame supplied by oxy-acetylene or the electric arc. Some time ago, however, it was found that a plain disc driven at a high speed would cut through steel simply by the heat of friction. This device has been considerably developed by a number of British machine tool makers in association with each other. The saw consists of a plain mild steel disc with a notched edge. In recent tests one user cut eight large joists right through in 40 minutes. In another case the saw was successfully used in cutting manganese steel rails, which previously could not be cut except by the oxy-acetylene flame. A manganese tramway rail can be cut through in 72 seconds. An ordinary tram rail can be severed in 37 seconds. Owing to its efficiency and simplicity, there is no doubt that the friction saw, as it is called, will come into extensive use for cutting through all kinds of steel sections.

TRADE AND INDUSTRIES SECTION.

Week in the Mining Material and Engineering Trades.

CHEERFUL BUSINESS OUTLOOK—IRON AND STEEL—TIMBER & BUILDING MATERIALS—AMERICAN NOTES—INCREASED COST OF EXPLOSIVES—ENGINEERING AND SHIPBUILDING DISPUTES IN BRITAIN—UNION'S COAL INDUSTRY—METAL MARKET.

The most important feature of the past week has been the annual meeting of the Chamber of Mines, which was held in the new building on Monday last and presided over by the Chairman, Mr. H. O. Buckle. The Chairman's comprehensive address is fully dealt with elsewhere, and it is only necessary here briefly to refer to the more important points raised in Mr. Buckle's speech. At the outset, the conditions (seven) were stated which would govern the future policy of the Chamber in its dealings with the unions, from which would be absolutely excluded any persons who had been associated with the S.A.I.F. or the "Council of Action." Previous agreements had, of course, ceased to exist, but the Chamber had undertaken to continue for the present the arrangements as to hours and basic wages which obtained before the strike.

The shop steward system had proved unsatisfactory, and the Chamber would no longer countenance it.

A union to be recognised by the Chamber must contain in its constitution proper provision for a secret ballot of its members before a strike can be declared.

The Chamber will in future decline to recognise any organisation of a political character.

The Chairman dwelt upon the unfairness of miners' phthisis legislation, which saddled the present and newer mines with an enormous retrospective liability in respect of phthisis created on the older mines, which, if the Draft Bill is passed, will have to provide the huge amount of £12,000,000 to meet claims under the Phthisis Act.

Dust-sampling survey in the mines during the past year had shown encouraging results.

Native labour since the end of 1921 had, owing to the upheaval, been depleted of 50,000 boys, and it will take several months to bring up the strength to the figure at December 31 last, but no efforts on the part of the Chamber would be spared to hasten the return of natives, and thus increase the employment of white labour with as little delay as possible.

The total gold output of the year from the Transvaal was 8,114,586 oz., a decrease of 39,586 oz. over the year 1920, but for the last five years the amount of gold annually produced has been diminishing, and no immediate relief could be expected in that respect.

The total tonnage of coal sold by the Transvaal Collieries during 1921 was 6,947,362 tons, a decrease as compared with 1920 of 232,762 tons. The average value at pit's mouth was 6s. 6·18d. per ton.

Merchants generally are hopeful of better business conditions in the course of the next few months. The return of the industry to normal can, naturally, only be a gradual one, but it is thought that every month that passes should bring with it more and more substantial improvement in mercantile conditions.

Meanwhile there is very little money in Johannesburg, and merchants are crying out for ready cash business, which, however, cannot be remedied until the returned miners have drawn their first month's pay, though the approaching Agricultural Show, with its advent of country visitors (this time on pleasure bent) should help the community to some extent.

Commercial men are somewhat concerned that the powers that be will in no wise overstep the bounds of prudence in the settlement now to be arrived at with the miners. We have an example in the Old Country of the result of undue severity in this respect, and it is hoped that conciliatory measures, wherever possible and where not incompatible with the economic position of the industry, will be adopted. If an equitable basis, fair to both sides, be arrived at, the feeling is universal that we shall eventually see a big expansion of the gold and coal mining industries and of business generally. Everybody is now naturally anxious to settle down again to hard work and make up for the time lost during the recent upheaval.

An influential mining material importer says the time has come when merchants will have to get stocks out from the other side; local stocks are now practically depleted, and the mines cannot much longer abstain from purchasing and must come into the market to replenish. No doubt, he said, the pendulum has got to swing in the direction of increased production by the mines. Mining material was to-day being sold at or below replacement value, and naturally the majority of firms are looking to a period of reconstruction; they would have to be satisfied to-day with a profit of 10 per cent. There is no doubt, he said, that consumers would get the benefit of new stocks coming in at lower prices, because competition is now exceedingly keen.

The Indemnity Bill passed its first reading in the Capetown Assembly on Monday last, with a Government majority of 14; the second reading was set down for yesterday.

Iron and Steel.

Business has been fair during the week. On the Commercial Exchange more inquiries were made in the early part of the week than was anticipated, but business slackened off somewhat towards the close. Competition is very keen now merchants have to make up a lot of leeway, but all are anxious to get things moving once more, and the general opinion is that we shall see busy times once the mines are fully working again. This can, however, only be a gradual process. Owing to the engineering strike at home, rivets, bolts and nuts and steel have advanced on the Continent and Britain.

Latest quotations.—Dunswart iron, 18s. per 100 lb. basis price; Union Steel Corporation, Ltd., 22s.; imported iron and steel, flats, small, 25s.; larger sizes, 30s.; imported round iron and steel, 25s.; channels and joists, 35s. 6d.; shafting, ⅝ in. to 2 in., 6½d.; steel plates, 1-16 in. and ⅛ in., 22s. 6d.; 3-16 in. and upwards, 22s. 6d.; spring steel, 7½d. to 8½d. a lb.; bolts and nuts, hexagon, round, ⅜ in., 9d. to 1s.; ½ in., 40s. to 45s. per 100 lb.; ⅝ in. and ¾ in., 40s. to 45s.; hexagon nuts, ⅜ in., 9d.; ½ in., 10d.; ⅝ in. and ¾ in., 7½d. lb.; fish plates, bolts and nuts, ⅜ in., 8d. lb.; ½ in., 6d.; ⅝ in., 5½d.; ¾ in., 5d.; dog spikes, 35s. per 100 lb.; rivets, ¼ in., 11d.; ⅜ in., 9d. ½ in. and ⅝ in., 37s. 6d. to 40s. per 100 lb.; brass rods, round, ⅜ in., 1s. 5d.; ½ in., 1s. 4d.; ⅝ in. and upwards, 1s. 3d.; brass rods, hexagon, 1d. lb. extra; copper rods, round, ⅜ in., 2s. 4d.; ½ in., 2s. 3d.; ⅝ in. and upwards, 2s. 1d. lb.; tool steel, 3s. 6d. to 3s. 9d. lb.; brass sheets, 1s. 11d. to 2s. 1d. per lb.; copper tubes, solid drawn, ¼ in., 3s. 9d. per lb.; ⅜ in., 2s. 11d. per lb.; 7-16 in., ½ in. and 9-16 in.,

FOR LONG & EFFICIENT SERVICE.

FAIRBANKS
GATE VALVES
CHECK VALVES
SLUICE VALVES
SWING CHECK
AND
GLOBE VALVES

The FAIRBANKS Company O.K.

Large Stocks are always on hand.

SOLE SOUTH AFRICAN AGENTS:

BARTLE & CO., LTD.,
LOVEDAY HOUSE, 'PHONE 3553. WIRES: "FAGGOT."
JOHANNESBURG
AND AT KIMBERLEY AND DURBAN.

Telegrams: "NIVONIA," Johannesburg.
'Phones: 2196,—2197,—2198

J. & R. NIVEN, Ltd.,
ENGINEERS,
CONTRACTORS,
MERCHANTS.

BALATA BELTING
JAMES DAWSON & SON, Ltd.
BITUMEN SHEETING
GEO. M. CALLENDER & CO., Ltd.
BOILERS
PENMAN & CO., Ltd.
COAL CUTTERS AND CONVEYORS
JEFFREY MANUFACTURING CO.
COLLIERY PLANT
CAMPBELL, BINNIE, REID & CO.
DRILL STEEL
JOHN NICHOLSON & SONS, Ltd.
ENGINES, LOCOMOTIVES
ANDREW BARCLAY, SONS & CO., Ltd.
ELECTRIC LIFTS
A. & P. STEVEN, GLASGOW.
CRANES
BUTTERS BROS., GLASGOW.
HOSE, VALVES, SHEET RUBBER
THE LEYLAND & BIRMINGHAM RUBBER CO., Ltd.
LUBRICANTS
THOS. HINSHELWOOD & CO., Ltd
STEEL SCREENING
THOS. LOCKER & CO., Ltd.

Barsdorf's Buildings, Marshall Street,
JOHANNESBURG.

SULZER
HIGH-LIFT CENTRIFUGAL
PUMPS.
For Mine Drainage, Waterworks, Etc.

Pumping Set suitable for lift of 2,500 ft.

LARGE LOCAL STOCKS IN
MEDIUM AND LOW-LIFT PUMPS.

For particulars apply to:
RICE, WILSON & HERD,
86, 87, 88, 96, Standard Bank Chambers, Commissioner St.
P.O. Box 930 Telephones 2299 & 2300. JOHANNESBURG.
Also South African Agents for
CALLENDER'S CABLE & CONSTRUCTION CO., LTD.
BRITISH THOMSON-HOUSTON CO., LTD., etc., etc.

2s. 9d. per lb.; ¾ to 1⅛ in., 2s. 6d. per lb.; 1½ in. to 2 in., 2s. 3d. per lb.; 2½ in. to 3 in., 2s. 6d. per lb.; 3½ in. to 4½ in., 2s. 8d. per lb.; copper rods, ⅜ in., 2s. 5d. per lb.; ½ in., 2s. 4d. per lb.; ⅝ in. to 2½ in., 2s. 2d. per lb.; copper sheets, 2s. 2d. to 2s. 3d. per lb.; fire box copper, 2s. 5d. per lb.; phosphor tin, 3s. 3d.; ingot tin, 2s. 2d.; ingot lead, £28 per ton; drill steel, 6½d.; hollow, 9¾d.; 1¼ in., 9d. to 10½d.; wire nails, 30s. to 35s.; shovels, 52s. 6d. to 55s.; wheelbarrows, 47s. 6d.; picks, 37s. 6d. to 67s. 6d.; pick handles, 21s.; hammer handles, 14 in., 7s. 6d.; 18 in., 9s. 6d.; 24 in., 13s. 6d.; 30 in., 18s. 6d.; 36 in., 35s.; barbed wire, "Shorthorn," 69 lb., 13½ gauge, 22s. per coil; plain galvanised fencing wires, No. 8 gauge, 100 lb. coils, 27s. per coil; No. 10 gauge, 100 lb. coils, 29s. per coil; No. 12 gauge, 100 lb. coils, 32s. per coil; bulb tee fencing standards, 14 lb., 27s. per dozen; 12 lb., 25s. per dozen; black baling wire, 14 gauge, 19s. per coil, 100 lb.; 12 gauge barbed wire, 22s. per coil, 96 lb.; plain wire, No. 8 galvanised, 21s. per coil, 100 lb.; fencing standards, 12 lb., 20s. per dozen; screening, 3s. to 9s. 6d. per sq. yd.; cyanide, 1s. 7½d.; zinc shavings, 1s. per lb.

Second-hand Machinery.

Orders from the mines, said a prominent dealer in second-hand machinery, are coming in very freely, both for new and second-hand goods. Of course, owing to the shortness of native labour, the batteries and some of the works are not in full swing, but immediately we get those 50,000 boys back he had every confidence that every mine from east to west would be working on a profitable basis, as production costs are bound to come down, and the low-grade mines will be able to work at a satisfactory profit. The mines are now overhauling their machinery which has been lying idle for months, and many parts are being renewed, which will mean, of course, good business now for second-hand dealers. At the moment, he said, there are numerous propositions being taken up along the Reef, east to west, and the defunct mines are now showing a lot of activity on the surface, where small batteries have been erected. There are also prospects which have been forgotten for years—reefs lying a good deal south of the present main reef are about to be opened up, and even the old Queen's Battery claims, west of Krugersdorp, have been taken over by a syndicate and being worked. A few of such propositions around Johannesburg are also now being taken up, and machinery will be required by them, so that better days are looming for the second-hand machinery dealer. There are also inquiries from the northern fields for batteries and machinery. One can foresee, he said, a year hence, studded about the Reef, a good many of the small man propositions flourishing, and it behoves the Government when assistance is required to open up these new fields to investigate their potential chances and assist those willing and anxious to prove these concerns. Another thing not to be forgotten, he said, is the huge body of main reef still untouched in the mines from east to west, which gives anything up to 5 dwt. in some portions along the Reef, and which heretofore could not, on account of high production costs, be profitably worked. Included in such areas might also be a good deal of the north reef. These potential sources of wealth are now about to be exploited and will be worked as soon as working costs are considerably reduced, as he predicts they will be. In the second-hand line of machinery business, therefore, during the next twelve months good trading should be done. A big local dealer has purchased about 750 tons of second-hand rails from 12-20 lb. weight, which are now being forwarded to Johannesburg to supply the immediate wants of those requiring rails. There is at the present time a good demand for small batteries, boilers and engines.

Engineering Shops.

The result of a visit to these this week revealed the fact that all are busily employed, and at no time during the past few months have we seen such busy hives of industry.

Agricultural Implements.

In this section there is no improvement as yet to report; money is scarce, and farmers are not helping matters by rushing the markets with their produce.

Engineering Dispute in Britain.

The principals in the engineering dispute have arranged to re-open negotiations. Meanwhile the lock-out notices affecting unions allied with the Amalgamated Engineering Union have not been suspended. The basis of negotiations —due largely to the mediation of the National Joint Labour Council, headed by Mr. Arthur Henderson—provides for the acknowledgment of the right of the employers to manage their own works, and the right of the workers to be consulted before a material change is made in the working conditions.

Timber and Building Materials.

Business in timber this week has been fairly good, stocks are abundant, and prices oversea are still firm. Building operations are indifferently good, but a move forward is expected shortly. Builders' wages are to be reduced by 4d. per hour from April 1.

Timber prices.—3 x 9 deals, 1s. to 1s. 1d.; scantlings, 11d.; beaver boards, 4¼d. to 4½d.; floorings, 6¼d. to 6½d.; ceilings, 4½d. to 4¾d.; Oregon, 6s. 6d. to 7s. a cube; pitch pine, 7s. 6d. to 8s.; corrugated iron, 8¼d. Furniture timber: Burmah teak, 17s. 6d. per cube here for first quality, 14s. 6d. for second at the coast; American oak, 1 in., 10½d.; 1½ in., 11d.; 2 in., 11½d., at coast; and Japanese oak, 1 in., 1s. 1d.; 1½ in., 2 in., 1s. 2d., at coast; West African mahogany, 1 in. to 4 in. thick, 26s. 9d. to 27s. 6d. per cube at coast; Rhodesian mahogany, 9s. per cubic foot at mills; Honduras mahogany, 30s. per cubic foot; American yellow pine, 1s. 6d. per foot of 1 x 12 here; American pine shelving, 10½d. per ft.; 3-ply wood, 3 m.m. up to 5 m.m., alder and birch, 4d. to 6½d. per sq. ft.; oak and teak, 3-ply, 11d. per sq. ft. Prices for bricks are: Klompje bricks, 25s. per 100 at works; fire bricks, £10 per 1,000 at works; mixed, 70s.; wire-cuts, £4 10s. to £5; and £5 for pressed per 1,000, at kilns; columns from 20s. to 30s. according to size.; roofing tiles, Marseilles, £25 per 1,000 at the works; chimney pots, 12 in., 7s. 6d.; 15 in., 9s.; 18 in., 10s. 6d.; lead oxide, 16s. per 100 lbs.; white lime, 7s.; unslaked, 10s. 6d. per 180 lb. bag; 8 lb. bag, 1s.; blue lime, 4s.; blue plaster lime, 5s.; cement, 11s. 6d. a bag; damp course and roofing, 36s., 54s. to 55s. for 1 to 3-ply.

Second-hand Iron and Timber.

Dealers report business as slightly improving, there are more inquiries about, and things are expected to move shortly. Second-hand iron, of which stocks are very bare all round, is quoted at 6d. to 7d., timber at 8d.

American Notes.

The American Trade Commissioner, Mr. Stevenson, in the course of a chat this week, said that with regard to the Tariff Bill some considerable delay would be likely to occur before it is finally put in operation, as a lot of revision was necessary; he thought it would be several months at least before the Bill was enacted.

The outstanding problem in the United States to-day, he said, is the threatened coal strike, with which is coupled the threatened railway strike, but the latest news that he had received was to the effect that this may be avoided. Should there be an economic and a just settlement—just for the workers and the capitalists—such a settlement will mean that the United States will have made a big step towards readjustment of economic conditions, as probably no one problem is more to the fore to-day in America than the railway situation, and until that is adjusted the whole economic balance of the States will be out of joint, and news of the next few weeks will be very important. This will, of course, be of interest to South Africa, because this readjustment, if easily and satisfactorily arranged, will go a long way towards better conditions in the United States and be reflected in the demand for raw materials. At the present time, he said, the producer of manufactured material as well as of agricultural products was suffering from very high freight rates.

American Coal Miners' Strike.

It is officially announced from Washington that Government efforts to secure a conference between mine owners and miners have failed and that a strike to-day is inevitable. The dispute which is over the readjustment of wages affects some 600,000 men.

Canada is also likely to be involved in this coal strike and work is expected to cease on all mines in Alberta and Eastern British Columbia to-day.

Explosives.

The British South African Explosives Co., Ltd., state that as the result of the recent upheaval and consequent stoppage of manufacture the price of explosives will be increased to some extent. The large stocks held at high cost will have to be worked off first, plus the expenses caused by the recent troubles, before any reduction can be looked for. The company further advises having reduced their price for lead piping from 5½d. to 4½d. per lb. less 2½ per cent. delivered Johannesburg.

West Rand Activity.

A well-known prospector says that there is great activity on the West Rand at the moment, and talk of putting up small plants. He has always maintained that progress in South Africa depends upon small propositions encouraged by the Government in every possible way, in order to give assistance to the settler and also for the sake of the railways considering the plight we are now in.

The Messina Copper Mine having closed down has been detrimental to the smaller man and has hit the settler very hard. It stands to reason, he says, that empty trains and vacant veld are not conducive to the welfare of the country. The opening up of the country in these times cannot be too strongly advocated, he thinks, as such development is absolutely necessary for our future prosperity.

Shipbuilding Dispute in Britain.

The result of the ballot in the shipbuilding industry, taken on the employers' demands for a reduction of wages and an extension of working hours, was a majority of 115,256 against acceptance of these terms. The result of the ballot will probably be a lock-out of all unions in bulk. The employers had decided to put into operation a reduction of war bonus of 10s. 6d. per week from March 29 and an additional 6s. from April 27, necessitated by the grave depression in the industry and the immediate need of placing costs on a basis which would induce new business. 300,000 workers are involved in the dispute.

Unemployed Shipping.

Over two million tons of shipping, of which 1,900,000 tons is British, are now unemployed in ports in Great Britain. Altogether 2,250,000 tons of British shipping is unemployed out of a total of 18 millions.

The position of American shipping is even worse. Five million tons of American State-owned shipping out of a total of 12,500,000 is lying idle, in addition to a large amount of privately-owned shipping.

Union's Coal Industry.

In 1914 the Transvaal and Orange Free State collieries employed 674 whites and 12,328 coloured, and these 13,002 mined 443 tons per head per annum. In 1921, with 1,257 whites and 20,048 coloured working, totalling 21,305, the result was only 367 tons for each worker, which figures speak for themselves. The Transvaal should be doing a very large proportion of the Indian Ocean coaling, and when it is in a position to do so there is a big future in store for the coalfields, but railway rates will first have to be considerably reduced before such an expansion can occur.

Railway Earnings.

The railway earnings for the week ended March 18 were £280,148, being £155,054 below the estimate, and the total from April 1, 1921, to March 8, 1922, was £20,107,745, which is £1,791,212 under the estimate for that period.

Electrical Goods.

A leading importer of electrical wares reports this week that he has nothing to complain of as regards the way business is now shaping; inquiries are very satisfactory, and orders are now more numerous than for a long time. Although the mines are not as yet calling for much stuff, contractors are getting busy, and he is looking forward to a busy time in the immediate future. He thought electrical business in England must be in a bad way because dealers now received few if any quotations, whereas previously they received price lists by nearly every mail. The same could be said of business in Germany and Holland, whence dealers now received infrequent quotations. On the whole, he said, things in the electrical business must be very bad in Europe.

Kimberley's Contract for Waterworks Pipes.

The Kimberley City Council has accepted the tender of Stewarts and Lloyds, Ltd., out of six tenders received, for the supply of waterworks pipes, the amount being £6,346 18s. 4d. Satisfaction was expressed by the Deputy-Mayor at a meeting of the City Council that a British firm had secured the contract.

Oil Fuel.

It is estimated that the British-India steamer *Donald*, which has arrived at Bombay on her maiden voyage, saved £2,000 on the round trip by using oil fuel instead of coal.

Wireless.

It is announced that direct wireless between Berlin and New York has been established by the Telefeenken Co.

The Cairo wireless station having been completed, the British postal authorities are now selecting a site for the East African station in Kenya, where it is intended to drive electrical machinery by water power.

Gold Discovery.

A *Times* correspondent stated that an auriferous reef miles in extent has been discovered by the Nile-Congo Syndicate belonging to the Tanganyika Concession. Alluvial has been traced in several rivers, and what is believed to be the source of the gold has been discovered in the form of an auriferous belt of rock.

Safeguarding of Industries Act.

The *Yorkshire Evening News* understands that the Board of Trade intends to advise the Government to repeal the Safeguarding of Industries Act.

Financial.

A new English company is shortly to be registered with a capital of £2,000,000 to take over the Anglo-Austrian Bank of Vienna. The control of the bank will be in the hands of the Bank of England.

S.A. Reserve Bank.

The ratio of cash reserves to liabilities to public, according to statement issued on March 25, is 69·5 per cent.

One of the largest commercial credits opened in London for a European country since the War is £4,000,000, which has been granted to Poland. £1,000,000 thereof will be used to purchase raw materials from Britain.

Metal Market.

London quotations, March 27: Standard copper, £58 2s. 6d. cash, £59 2s. 6d. forward; electrolytic copper, £64 5s. cash, £65 15s. forward; standard tin, £143 15s. cash, £145 5s. forward; foreign lead, £21 12s. 6d. cash, £21 7s. 6d. forward; quicksilver, £10 17s. 6d.; bar silver, 38⅛d.; bar gold, 95s. 3d. per oz.

CORONATION SYNDICATE, LIMITED

(Incorporated in the Transvaal)

ABRIDGED NOTICE OF EXTRAORDINARY GENERAL MEETING.

NOTICE IS HEREBY GIVEN that an EXTRAORDINARY GENERAL MEETING of the above Company will be held in the SYNDICATE'S BOARD ROOM, BETTELHEIM'S BUILDINGS, JOHANNESBURG, on the 6th day of APRIL, 1922, at 11 o'clock in the forenoon, for the purposes following:

To consider and, if deemed fit to confirm an Agreement entered into between the London Committee of the Company and certain Underwriters in England for the reconstruction of the Company. This Agreement provides, *inter alia*, that the Company's Issued Capital of £520,000 in £1 shares, all issued and fully paid up, be reduced to £130,000 in 520,000 shares of 5s. each, by writing the sum of 15s. off each of such issued shares; that such reduced capital be increased to £480,000 by the creation of 1,400,000 new shares of 5s. each, ranking *pari passu* with the above-mentioned 520,000 shares; that the option held by the Company for the purchase of the Mineral Contract of Lease over portion of the Farm "Luipaardsvlei," No. 10, District Krugersdorp, be exercised, that 1,000,000 of the said new shares be issued as fully paid up in consideration of the said Mineral Contract, in terms of the said option; that the remaining 400,000 new shares be offered for subscription at par to Shareholders in the Company *pro rata* to the holdings of such Shareholders in the said reduced capital of £130,000; that all shares not applied for by Shareholders (under the rights conferred by the preceding paragraph) may be applied for by Shareholders at par during the period for which the lists are open for subscription to the new issue. Each of the Shareholders aforesaid who has been allotted any of the said 400,000 shares shall have the right, exercisable at any time after the 1st February, 1924, and before the 28th February, 1924, to call for one further share of 5s. in the Company, at the price of 7s. 6d. for every share allotted to him out of the said 400,000 shares; the Underwriters will subscribe at par for all the said 400,000 shares not applied for by Shareholders; in consideration of his undertaking each Underwriter is to be paid by the Company a cash commission of 5 per cent. (3d. per share) on the par value of the shares underwritten by him, payable at the expiration of three calendar months after the date of the aforesaid offer of 400,000 shares to existing Shareholders, and also receives the right, exercisable at any time after the 1st February, 1924, and before the 28th February, 1924, to call for one further share of 5s., at the price of 7s. 6d. for every share so underwritten by him.

Copies of the Agreement will lie for inspection of Shareholders at the Head Office and London Office of the Company.

In the event of the above Agreement being confirmed, to pass such resolutions as may be necessary to carry it into effect, and also to alter the Company's Articles of Association by inserting therein provisions enabling the Company to pay a commission to any person for subscribing or agreeing to subscribe for shares in the Company (absolutely or conditionally), such commission not to exceed 5 per cent. on the capital amount of the shares.

AND NOTICE IS HEREBY FURTHER GIVEN that a further EXTRAORDINARY GENERAL MEETING of the Company will be held at the same time and place on the 28th day of APRIL, 1922, for the purpose of receiving a report of the proceedings of the foregoing Meeting and of confirming as Special Resolutions, in terms of the Companies Act, 1909 (Transvaal), all or any of the Resolutions passed thereat.

The Share Register of the Company will be closed at the Head Office of the Company, Johannesburg, from the fourth to the twenty-eighth APRIL, 1922, inclusive; and at the London Office from the fourteenth MARCH to twenty-eighth APRIL, 1922, inclusive and the Shareholders on the Register after giving effect to all Transfers lodged in Johannesburg prior to fourth APRIL, and in London prior to fourteenth MARCH, will be deemed to be the existing Shareholders for the purpose of this reconstruction.

By Order of the Board,

SAM. B. DOWLING,

Secretary.

Head Office, Bettelheim Buildings,
Johannesburg, 17th February, 1922.

THE SOUTH AFRICAN LAND & EXPLORATION COMPANY, LIMITED

(Incorporated in the Transvaal)

NOTICE TO SHAREHOLDERS.

NOTICE IS HEREBY GIVEN that the NINETEENTH ORDINARY GENERAL MEETING of Shareholders in the above named Company will be held at 38 MEISCHKE'S BUILDING, HARRISON STREET, JOHANNESBURG, on TUESDAY, the 23rd MAY, 1922, at 12 noon, for the following purposes:—

1. To receive the Reports of the Directors and Auditors, together with the Balance Sheet as at 31st December, 1921.
2. To elect two Directors in the place of Messrs. Dundas Simpson and J. H. L. Mainsty, who retire, but are eligible and offer themselves for re-election.
3. To elect Auditors for the ensuing year, and to fix the remuneration for the past audit.
4. To transact such other business as may be transacted at an Ordinary General Meeting.

The Transfer Books of the Company will be closed from the 17th of May to the 6th June, 1922, both days inclusive.

All proxies must be lodged not less than twenty-four hours prior to the time of meeting.

By Order of the Board,

L. A. WHITELEY,

Secretary.

Head Office, 38 Meischke's Building,
(P.O. Box 2162),
Johannesburg,
February 20th, 1922.

RHODESIAN TEAK & MAHOGANY

FOR MINING & BUILDING PURPOSES, ANT, ROT AND DAMP RESISTING.

Sleepers, Guide Blocks, Deals, Scantlings, Flooring (Machined for Secret Nailing) and all kinds of Purpose-Made Joinery, Fencing Posts, Etc.

PRICES MODERATE.

RHODESIA NATIVE TIMBER CONCESSIONS,

35, PERMANENT BUILDINGS, HARRISON STREET, JOHANNESBURG.

Box 5530—Phone 3568—Yard : Eloff St. Extension

The Consolidated Mines Selection Company (England)/Anglo American Corporation Group of Companies.

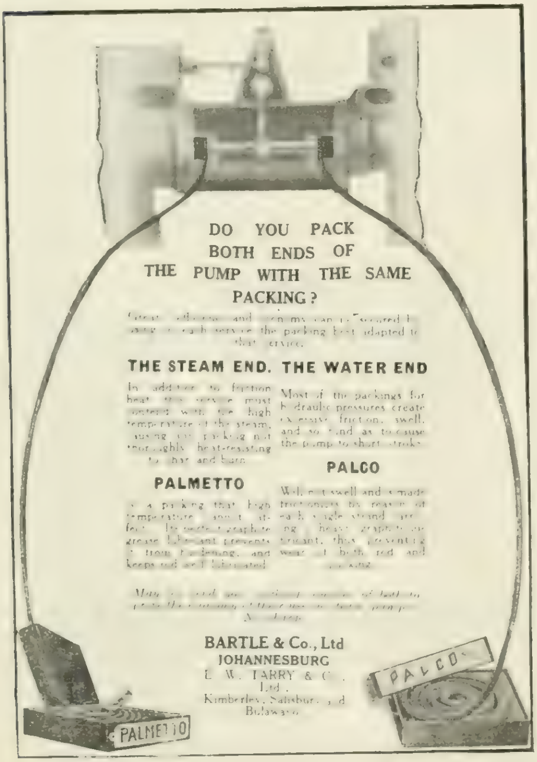
NOTICE is hereby given that the Annual General Meeting of the under-mentioned Companies, all of which are incorporated in the Transvaal, will be held in the Board Room, Second Floor, the Corner House, Johannesburg, as follows:—

Name of Company	Date of Meeting	Time	Share Transfer Register will be closed from
West Springs, Limited	Monday, 29th May, 1922	11 a.m.	22nd May, 1922 to 12th June, 1922.
Daggerfontein Mines, Limited	..	11.30 a.m.	..
Springs Mines, Limited	,,	12 noon	,,
Brakpan Mines, Limited	,,	2.30 p.m.	..
Rand Selection Corporation Limited	..	3.15 p.m.	..
The New Era Consolidated, Limited	..	3.45 p.m.	..
Transvaal Coal Corporation, Limited	Saturday, 3rd June, 1922	10.30 a.m.	29th May, 1922, to 19th June, 1922.
Anglo American Corporation of South Africa, Limited	..	11 a.m.	..

BY ORDER OF THE BOARD,

For the Secretaries,
J. H. GRATTON.

Head Office: The Corner House, Johannesburg.
27th March, 1922.



DO YOU PACK BOTH ENDS OF THE PUMP WITH THE SAME PACKING?

Great efficiency and economy can be secured by using in each service the packing best adapted to that service.

THE STEAM END.

In addition to friction heat the service must contend with the high temperature of the steam, causing any packing not thoroughly heat-resisting to char and burn.

PALMETTO

is a packing that high temperature won't stiffen. Its special graphite grease lubricant prevents it from hardening, and keeps rod well lubricated.

THE WATER END

Most of the packings for hydraulic pressures create excessive friction, swell, and so bind as to cause the pump to short stroke.

PALCO

Will not swell and is made frictionless by reason of each single strand carrying heavy graphite lubricant, thus preventing wear of both rod and packing.

[illegible]

BARTLE & Co., Ltd
JOHANNESBURG
E. W. TARRY & Co., Ltd.,
Kimberley, Salisbury and Bulawayo

Tullis

LEATHER BELTING

THE best possible results can only be obtained from any type of machine when using the most suitable Belting

"Tullis" Belting is made by the largest Belting Manufacturers in the world, with a reputation and experience extending over 80 years

It is absolutely reliable **under every condition** and in **all climates.**

No matter the position of the Drive, there is a **Tullis Belt** made to meet the requirement.

Illustrated Catalogue on Application.

JOHN TULLIS & SON, LTD.,

BELTING SPECIALISTS,

ST. ANN'S WORKS,
GLASGOW, SCOTLAND.

JOHANNESBURG.
18, TROYE STREET.

Parliament and the Industry.—General Hertzog Excels Himself.
New State Areas Plant.—The V.F.P. during the Revolt.

The South African
Mining & Engineering Journal

THE ONLY WEEKLY MINING PAPER IN THE CONTINENT OF AFRICA.

Established 1891.

Vol. XXXII., Part II JOHANNESBURG, TRANSVAAL, SATURDAY, APRIL 8 1922. No. 1593.

Is Deep Mining a Suitable Occupation for White Men?

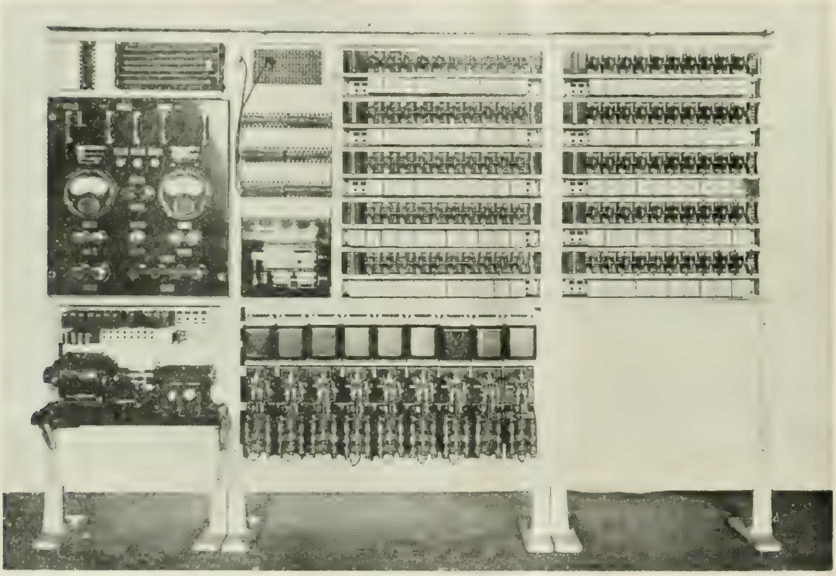
The accompanying photograph depicts employees of the Witwatersrand mines descending to their work. The illustration possesses a special degree of topical interest at the present moment because of the reported recommendations of the Unemployment Commission in regard to deep mining. The matter is debated at length in a special article appearing in this issue.

SIEMENS BROTHERS

AUTOMATIC TELEPHONES

In addition to a number of
PUBLIC EXCHANGES FOR LARGE TOWNS
we have supplied scores of
PRIVATE AUTOMATIC EXCHANGES

Our EXPERIENCE is wide—Our SATISFIED CUSTOMERS numerous



PRIVATE AUTOMATIC EXCHANGE BOARD 100 Working Lines

CHEAP TO MAINTAIN—SIMPLE TO WORK

IMMEDIATE DELIVERY FROM LOCAL STOCK

Representatives in South Africa:

A. J. G SIMPSON, A.M.I.E.E.
African Life Buildings, 85, St. George's St.,
CAPE TOWN.
P.O. Box 239 Cape Town. Telephone 1202 Central.

G. H. B. BERNARD, A.M.I.E.E.
9-10, Cotts Buildings, Rissik and Fox Sts.
JOHANNESBURG.
P.O. Box 7404 JOHANNESBURG. Telephone 408 Central.

Telegrams: "SIEMENS"

The New State Areas Plant.

INITIAL CONSTRUCTION WORK WELL ADVANCED—EXPECTED TO BE IN COMMISSION EARLY NEXT YEAR—RADICAL DEPARTURES FROM ORDINARY PRACTICE—ALL SLIMING AND NO STAMPS OR AMALGAMATION—THIRTEEN LARGE TUBE MILLS TO BE ERECTED—INITIAL CAPACITY 600,000 TONS PER ANNUM—PLANT CAN BE DUPLICATED AT COMPARATIVELY SMALL COST—HADFIELDS TO SUPPLY CRUSHERS—THE LAST WORD IN "THE NEW METALLURGY."

In the following interesting and important article we are able to give the first detailed account of the metallurgical plant of the New State Areas mine. Work in connection with the initial construction details commenced in January, and in rather less than a year from now this equipment, which will crush ore without the employment of gravity stamps and will recover gold without any amalgamation, will be in commission.

The North Shaft of the New State Areas.

In the middle of last year the *South African Mining and Engineering Journal* announced that important metallurgical experiments had been in progress at the two producing subsidiaries of the Consolidated Mines Selection group, which gave promise of in some degree revolutionising what has come to be regarded as standard Rand practice.

The Springs Mines Experiments.

Broadly speaking, the departure from the ordinary methods of crushing and treatment may be described as elimination of the gravity stamp mill and the adoption of an all sliming process. As a result of these tests, the crushing capacity of Springs Mines was increased without the erection of any additional stamps. The tube mill plant was added to and by means of stage crushing and fine grinding the whole of the gold is now recovered in the cyanide works. It is understood that important economies are being secured by this means.

The New Metallurgy.

The Springs Mines plant was designed in accordance with the ideas of standard practice which until recently have governed the lay-out of Witwatersrand metallurgical plants, and that company's ore crushing and treatment equipment was remodelled as a result of the exhaustive tests already referred to.

In the case of the New State Areas mine the crushing and treatment plant has been designed on lines which constitute distinct departures from current practice, and through the courtesy of Professor J. G. Lawn, Consulting Engineer and Joint Managing Director of the Johannesburg Consolidated Investment Group, and of Mr. Davidson, the group's Consulting Metallurgist, we are able to-day to give the first detailed particulars of the design of the New State Areas metallurgical equipment. This plant marks the beginning of a new epoch in the metallurgy of gold, not only in South Africa but probably in the world generally.

Radical Departures from Standard Practice.

The New State Areas Company contributed towards the cost of the experiments on the Springs Mines, and as a result of the data obtained there the Company some little time ago decided to make some very distinct departures from current practice in its plant, which is to be erected on the youngest subsidiary of the Barnato group

Plans of this equipment have now been completed, excavations and other preliminary details of construction are well advanced, and it is hoped to have the new equipment in commission by February of next year.

A Crusher-Tube Mill Combination.

The plant will have a capacity of 50,000 tons per month and all sliming of the ore will be effected by means of a combination of crushers and tube mills. Gravity stamps and amalgamation plates will be entirely eliminated, and it is confidently calculated that by the adoption of these new ideas there will be not only a large saving in capital expenditure but that working costs will be substantially reduced whilst the value of the ultimate residues will be certainly no higher than is the value of residues in the older plants.

Details from the Flowsheet.

In broad outline the progress of the ore through the New State Areas plant as revealed by the flow sheet which has been prepared will be as follows:—

The ore from the headgear bins will pass into a large receiving bin capable of holding [illegible] tons. From there the ore will be transported and sorted on three sorting belts to the crushers. There will be three sets of crushers of which two will be in commission and one will be a stand-by set. In the primary set Hadfield's gyratory crushers will reduce the ore to 2¼ in. cubes. In the secondary set, there will be horizontal disc crushers, which will reduce the rock to a maximum size of one inch. The whole of the crusher plant of the New State Areas equipment is being supplied by the well-known Sheffield firm of Messrs. Hadfield's, Ltd. From the secondary crushers a main conveyor will then take the rock to the tube mill bins. There will be 13 tube mills, each 6½ ft. by 20 ft. The standard size of tubes on the Rand is 5½ ft. by 22 ft., so that the New State Areas tube mills will be substantially larger than others on the Reef. Each tube mill will have a Dorr classifier and there will be no amalgamation.

Each of these tube mills will be operated by a 250 h.p. motor. Spent pebbles and rounded grits coming from the tube mills will be dealt with by grit pebble crushers.

The pulp from the tubes will be pumped by eight inch main slime pumps to the slime collectors. Ore will enter the water circuit in the crushers, and as soon as the pulp reaches the tube mills it will come into the cyanide circuit and will be crushed in a cyanide solution. The slime collectors will be of a new type. They will be concrete square tanks. Eight of these tanks are to be erected.

The overflow from them will go to three tanks of the same type. The slimes will pass on to the Brown agitator tanks. Instead of the standard type of Brown tank, which is 15 ft. by 45 ft., the agitator tanks at the New State Areas will be 22 ft. by 45 ft., thus giving double capacity in one tank. The slime from the Brown tanks will next pass to a pulp storage tank and from there will gravitate to a Butters filter plant of 600 leaves. The solution from the Butters filter will pass through classifiers in the usual way to a deaeration plant and from this to the Merrill zinc dust precipitation presses, the solution being returned to a big storage tank.

Question of Expansion.

The plant will have an initial capacity of 600,000 tons per annum, but will be capable of considerable expansion and can, in point of fact, be duplicated for a comparatively small outlay.

Large Savings Anticipated

As already stated, a large saving in capital expenditure will be effected in the installation and operation of this plant as against the old type of equipment, and in this connection it should be pointed out that the principal savings are expected to be made in respect of all operations affecting the passage and treatment of the pulp after leaving the tube mills in consequence of having one type only of product, namely, slime, to deal with.

Such, in brief, are the essential details of the equipment of this new Far East Rand mine, in which the State possesses a large share of the substantial profits which are expected to be earned and which will enter the producing list in about eleven months' time.

J. RAMSAY-ANDERSON, B.Sc., Agriculture, 16 years' practical experience of farming and planting in Africa. 8 years as Advisor and Director of Agriculture, Colonial Governments. Is open to report, advise and value properties; personal supervision; advice given to intending settlers, fees moderate.

14, Palace Buildings, Pritchard Street,
JOHANNESBURG.

Mining Men and Matters.

Mr. W. M. Morley, the well-known consulting engineer has arrived in Johannesburg from Delagoa Bay and is staying at Heath's Hotel. He is accompanied by Mrs. Morley, and they propose leaving for England in the course of the next week or two.

* * *

Before the call proceeded on Wednesday the newly-elected chairman of the Johannesburg Stock Exchange, Mr. A. D. Viney, addressed members, thanking them for the honour done him. He went on to say that when the mantle of the deputy chairmanship descended on him three months ago, the times were not so auspicious as at present, the bar was closed and he was unable to offer members any hospitality, which he now did. The prestige of the Stock Exchange had been upheld during the recent critical times, and two facts on which members could congratulate themselves emerged. During the whole of the trying times there was a complete absence of financial panic. One of the reasons why London is the financial centre of the world was its sane finance and absence of panic in times of stress, and if we here follow that example we shall be building up and consolidating Johannesburg as the financial centre of South Africa. A second point for congratulation is that when the call came for volunteers to serve on the side of law and order the response from the Exchange was magnificent. It was immediate, and one on which every member may feel proud. Mr. Viney hoped the coming year would be a successful one, as the Benevolent Fund stood at a low figure and should be largely increased. He looked forward to a seat in the Exchange being worth at least £1,000 when a seat in New York last month fetched 88,000 dollars, roughly £20,000.

* * *

The president-elect of the Institution of Mining and Metallurgy, who will assume this position at the annual general meeting to be held this month, is Mr. S. J. Speak, a well-known consulting mining and metallurgical engineer, and member of the firm of Hooper, Speak & Co. In 1891 Mr. Speak was sent to Damaraland by the late Sir Donald Currie, as assistant to Eugene Hoefer, who was a graduate of Berkeley, and took part in the examination of several copper and gold deposits, including the Otavi copper mine. This was before the discovery of the Tsumeb copper-lead deposit, and little of value had then been found in that part of Africa. For the next two years, 1892-4, he was a lecturer on metallurgy at Sydney University, where the mining school was then being created. During this time he visited the principal mining districts in Victoria, New South Wales, Queensland, and Tasmania. He returned to the Rand as chief chemist and metallurgist for Rand Mines, Ltd., a position which he held for 2½ years. Here he designed and erected the cyanide plant for Geldenhuis Deep, and in this connection was pioneer in the use of steel tanks in cyanide practice. In 1897-8 he was in Celebes for Dutch syndicates formed in the Indies, but his experiences here were far from pleasant. In 1899 he returned to South-West Africa and did much exploration between Otavi and the Cunene River. In the next year he was examining properties in various parts of Ashanti and the Gold Coast, and in 1901-2 he was superintendent of the principal camp of the Oriental Consolidated Gold Mining Co. in Korea. After visiting properties in the south of France in 1903, he went to British Columbia in 1904 to manage the Ymir gold mine. On his return to London next year he entered into partnership with Mr. Edward Hooper, and since then he has visited in consultative capacity many parts of the world, such as Siberia, Sumatra, Australia, South Africa, West Africa, and the Argentine. Mr. Speak's experience is of the widest. "His professional life is characteristic of the best traditions of the English mining engineer," says the *Mining Magazine* of London.

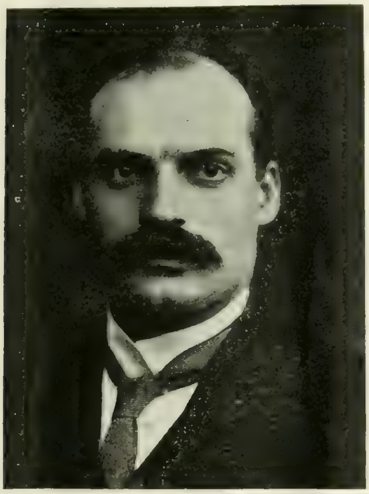
PARLIAMENT AND THE MINING INDUSTRY.

GENERAL HERTZOG'S AMAZING CONTENTIONS—MORE SMOKE SCREENS FROM THE UNHOLY ALLIANCE—THE HOUSE INDULGES IN MUD SLINGING AND NEGLECTS THE COUNTRY'S BUSINESS—THE MINING INDUSTRY AND THE COMMISSIONS—A RECOMMENDATION TO THE GOVERNMENT—IS DEEP MINING AN UNSUITABLE OCCUPATION FOR EUROPEANS?

The gold mining industry of the Witwatersrand has always bulked largely in the public view in South Africa, and for the last quarter of a century the problems and turmoils of the Reef may be said to, in large degree, have filled the complex picture of Africa south of the Limpopo. At the present time the Rand is more than ever absorbing attention, for the mines, after having been the fons et origo of the recent strike and revolution, are now the subject of a fierce and heated debate in the House of Assembly.

Confusion of Ideas.

It is hard, perhaps, for members to dissociate in their minds the purely industrial aspects of the problem of the Reef from all the political intrigues and bloodshed which have made the Rand's history so spectacularly painful and painfully spectacular. The trouble with the Rand Gold Field is that it has never been allowed to be run as a business proposition, as it should be. The fact that for the last quarter of a century it has produced the bulk of the gold of the world seems to have invested the business of mining in the Transvaal with all sorts of semi-justifications for violent upheavals, and for raids, war, strikes, riot, rebellion and revolution.



The Hon. F. S. Malan, Minister of Mines and Industries in the Union Government.

The Lure of Gold.

Throughout history men have always been prepared to sell the lives of others for gold; some, indeed, have been prepared to sacrifice their own lives on the yellow altar, and always there have been plenty of smooth-tongued pleaders who have bought their passports to eminence by means of gold. The Rand has had more than its full share of these unhappy adornments of industry. Had it been such an unromantic thing as a soapworks, the soothsayers might have let it alone. But the glamour of the Golden Reef seems to have created a vortex into which lives and reputations and fortunes and principles are for ever being poured.

Pawns in a Political Scramble

Those who seek to manage the mines as mines and not as pawns in a political scramble are never allowed to think in mere terms of working costs, dividends, profits, ore reserves or outputs, without the entanglements of party principles or the stultifying considerations of race and caste and colour. The labour problems of the mines as expressed in the repatriation of the Chinese, the findings of the Low Grade Mines Commission in regard to the employment of Northern natives, and the recent struggle over the status quo agreement have not been viewed in their proper industrial perspectives by the legislature, but through the smoked glasses of the party politician.

The House of Do Nothing.

And once again the Industry is the absorbing shuttlecock of rhetoricians in the House of Assembly. The problems of the mines, the strike, the revolution, and the Indemnity Bill are the only topics of conversation. For more than two months now the House has been sitting, and nothing whatsoever of a constructive nature has been achieved. Deaf ears, for example, are turned to a project to provide a new railway free of cost to the people of the country. After the suppression of the revolution General Smuts made an appeal to the House to give debating society tactics the go by and to get on with the business of the country. But his seeds of reason have, it seems, fallen on stony ground. For more than eight weeks the members of our dignified Legislature have been slinging mud at one another. For this action the country pays them four hundred good pounds per annum.

Cabinet Ministers of the Disunion of South Africa.

They have to justify this salary in some way or other, and so with one eye on the dorp which they misrepresent and the other eye on the vision of one day drawing two or three thousand per annum as a Minister in the Cabinet of the Disunion of South Africa, they cudgel their brains for fresh invectives to hurl at the existing Government. Some of the declarations, criticisms and questions of those who seek to defend the strike and the revolution and to condemn the Government's action in suppressing the Red Revolt assuredly justify wise old William of Avon's definition of a politician. "A politician, one who would circumvent God," wrote Shakespeare. If some of our South African politicians have not yet succeeded in outwitting the Deity they surely have succeeded in deceiving themselves and in creating an atmosphere of terminological inexactitudes so pregnant with falsehoods that one would think the Commandment which enjoins one not to bear false witness against one's neighbour had become a dead letter in our moral code. It would be amusing were it not so deplorable that the loquacious lawyers sitting so comfortably under the calm and safe serenity of Table Mountain can attempt to persuade people that there was no justification for the proclamation of Martial Law and that the Government could have settled the strike and scotched the revolution by waving olive branches from mine headgears. It is a pity that these patrons of peace did not try to enter Fordsburg on March 11th; it is an even greater pity that some of them were not on the Brakpan Mine on the morning of March 10th.

General Hertzog's Classic.

How all the upset could have been averted has become the popular theme with certain of these politicians with their peaceful panaceas. General Hertzog, for instance, on Monday in a lengthy and bitter attack on the Prime Minister endeavoured to make the House and the country believe that he, General Hertzog, had through the medium of Mr. Van Eyssen, "the representative of the Chamber," arranged a settlement of the strike in terms of the Nationalist leader's sitting of February 21st. According to the Press report of the debate General Hertzog is stated to have declared that General Smuts when he refused to accept his motion, he General Smuts had knowledge of the fact that both the Chamber of Mines and the workers were prepared to acquiesce in the motion and to end the strike. In other words, if Parliament accepted the motion the Chamber was prepared to agree. We regard General Hertzog's declaration on the subject of the Chamber of Mines acquiescence in his motion as a classic deserving of an honoured shelf in the library of all true lovers of veracity. In its studied honesty the statement has probably never been excelled in this country, unless by Mr. Jimmy Green in his recent famous Town Hall peroration, when Mr. Green said that he saved the lives of 150 policemen at the Power Station.'

The Chamber's Telegram.

The Chamber of Mines has made the matter clear by publishing the following copy of a telegram sent 4th April, 1922, by the Chamber to all M.L.A.'s and Senators.

"According to 'Rand Daily Mail,' General Hertzog stated on Monday, 3rd April, in the House of Assembly that Chamber of Mines was prepared to agree to his motion in regard to the strike. This is entirely incorrect. Chamber was never so prepared. General Hertzog is further reported to have quoted an alleged telegram on the subject from the Chamber to Mr. Van Eyssen, one of its representatives at Capetown, as follows: Begins: You have our fullest confidence and you have our authority, but all the same we desire to impress upon you not to allow your attitude to be partial to either one side or the other. Ends. No such telegram or any telegram even remotely resembling it was ever sent by the Chamber. The only telegrams which passed between the Chamber and Mr. Van Eyssen on the subject were as follows. Van Eyssen to Chamber, 23 February. Begins. Is settlement on lines General Hertzog's motion acceptable to you? Reply without delay. Ends. Chamber to Van Eyssen, same date. Begins. General Hertzog's motion quite impracticable and entirely unacceptable to us. Ends. Further, on 7th March, Johannesburg representative of 'Die Burger' interviewed Chamber on subject and was given copies of telegrams quoted above to transmit to his journal."

Prominent men in the British coal industry leaving a conference during the period of the great strike in Great Britain last year. Mr. Brace, who has left England for South Africa to sit as a member of the latest Industrial Commission, played an important part in the deliberations of these conferences.

If one were tempted to believe all the things that are said in the House of Assembly at Capetown one would almost be inclined to the view that it has been General Hertzog and not General Smuts after all who has been coquetting with the Chamber of Mines! General Hertzog apparently took this labour of love upon himself because of his real affection and regard for the workmen on and in the mines—particularly the British workman on and in the mines.

The Unholy Alliance.

We all know how dearly the Nationalist Party love them and their votes. It was because of this grand and inspiring spirit of charity that the Opposition members declaimed against the Chamber's very proper desire to dispense with rather less than 2,000 redundant employees. What then will the unholy alliance of Labour and Nationalists think of the final report of the Unemployment Commission which, it is understood, opposes the employment of white men on deep mining? Nearly all mining on the Rand to-day is carried on at considerable depths. So that the Commission's findings would appear to veto underground work as a means of employment for Europeans altogether.

The Unemployed Commission's Finding.

It is understood the Commission subscribes to the view that the more the mining industry is cramped by forcing expensive white labour upon it—labour that could be done by natives—the more is the industry being curtailed instead of expanded, and the less chance there is of developing the low-grade propositions. The members of the Unemployment Commission were: Mr. H. L. Lindsay (chairman), Professor Lehfeldt, Commandant Hamman, Captain Parrack, Messrs. J. H. Conradie, J. Clarke, M. Kentridge and A. Crawford. This is certainly not a Chamber of Mines personnel. In fact, not one member of the Board is known to possess pro-capitalistic sympathies and one or two members are notoriously hostile to the Chamber of Mines. Here then is further puzzling commentary upon the Rand and its ways, a commentary which, of course, has its political significance and which in some manner or other will be twisted or turned to poltical advantage. What, we wonder, will the Labour members and their professed friends of the backveld say to such a finding by a Government Commission! After all the hysterical shrieks about the *status quo* agreement and the malicious confusion of that ill-conceived phrase with the issue of the colour bar, what will the sponsors of a White South Africa and a Red Rand say to a view expressed by non-capitalist investigators which goes further towards the breaking down of the colour bar than any conceptions that the Chamber of Mines and its members ever have dreamed of? The view is positively startling in its significance. But in dealing with a kaleidoscopic industry situated on the brink of a volcano of race and colour and class prejudices and which is dominated by politicians, startling opinions, heated controversies and somersaulting convictions must be expected.

Government by Commission.

So much for the Unemployment Commission. Because the members of this Commission, or for that matter any other Commission, think or recommend or urge this or that it by no means follows that the Government will take the

ASBESTOS
PROPERTIES and FIBRE

ARE PURCHASED BY

AFRICAN ASBESTOS MINING CO., LTD.
P.O. Box 504, BULAWAYO
Telegrams: "Safasco," Bulawayo 'Phone No. 356

Johannesburg Correspondents:—HUGGINS & CO., LTD.
Consolidated Building ———— JOHANNESBURG
Telegrams: "Tarbros" P.O. Box 5105 'Phone 574

slightest notice of what they think or urge or recommend. Many months ago, for instance, the Low Grade Mines Commission made certain important recommendations, particularly in regard to the recruiting of native labour from northern latitudes, which if acted upon would have been of great assistance to the industry. But the Government has apparently been too busy to take any further notice of those counsels. Similarly, a Select Committee specially constituted to examine and report on the iron and steel contract as between the Minister of Railways and the Pretoria iron mines in August, 1920, advised the Government not to ratify the provisional agreement. The Government did exactly what the Select Committee advised it not to do and has since had abundant cause to regret its action. The appointment of Commissions and Select Committees is, it seems, the prerogative of all democratic Governments, and particularly so of the Union Government. Whether the Commission serves any useful purpose or not is beside the point. Commissions can smooth over multitudes of trouble and always provide a little healthy and perhaps profitable mental recreation (and education) for people who might not otherwise be devoting the best of their talents to the possible benefit of the State.

Sir Robert Kotzé, Government Mining Engineer. Sir Robert is the only member of the newly-constituted Commission who has an intimate knowledge of Rand mining problems, and it is therefore urged that cross-examination of witnesses who tender evidence before the Commission by representatives of the Chamber of Mines and of Labour should be permitted.

The Latest Commission.

We do not, of course, mean these remarks to apply to the latest Industrial Commission which is to inquire into the various labour and economic problems of the Rand. As we said in our last issue, the constitution of that Commission is in our view admirably impartial. There is only one point which we would like to make here and as supplementary to what we wrote last week in regard to that Commission.

A Recommendation to the Government.

And that is this: That inasmuch as Sir Robert Kotze is the only member with an intimate knowledge of all the intricacies of Rand mining, cross-examination of witnesses by accredited representatives of both the Chamber of Mines and the Trades Union Executive should be permitted. It seems to us if such an analysis of evidence (which of its very nature must often be highly technical) were provided for in the constitution of the Commission it would assist materially in the sifting of the tares of fiction from the wheat of useful fact. We would, therefore, most seriously recommend to the Government that such cross-examination should be allowed. The Witwatersrand hopes for much from this Commission. Perhaps the Rand will be disappointed in its hopes. But obviously the future of the industry may in large degree depend upon its findings and recommendations, upon the judgment of a Solomon and the bracing counsels of the leader of the Welsh miners. Since it is clear that neither the Chamber nor the mine managements are to be allowed the free reins of direction in their own business we can only trust that the Commission will be allowed to view the many problems of the Rand in their true perspectives, so that when their final summing up is passed on to Parliament the politician may have as little scope as possible for indulging in his favourite pastime of eloquent circumvention at the expense of the country and to the confusion of his constituents.

General Hertzog, who has excelled himself in the House of Assembly this week by making certain statements which are astounding in their inaccuracy.

Some 1922 Dividends.

The dividends declared by mining and financ panies since the beginning of the year are as follow

Company.	Amount.	Date of declaration.	Amount of distribution.	cent or share.
Gold Mines Invest. (10/-)	0 6	Feb. 11	£10,070	5
Jupiter	1 9	Feb. 8	—	—
Koffyfontein	3 -	Mar. 3	56,250	47½
S.A. Gold Trust	1 -	Feb. 26	25,000	601¼
Transvaal & Delagoa Bay	15%	Jan. 30	41,625	—
Wankie Colliery (10/-) ...	5%	Feb. 21	28,366	
Witbank Colliery	2/-	Feb. 15	35,000	302½

GLYNN'S LYDENBURG.

The following are the particulars of the output for the month of March:—Tons crushed, 4,370, yielding 1,750 fine oz.; estimated value of month's output, £8,074; estimated profit for month, £2,501. Note: The above figures are exclusive of expenditure for the month upon shaft sinking, special development and capital expenditure amounting to £1,916. The gold output for the month is valued at £4 12s. per fine oz. after allowing for exchange and realisation charges.

CLIMAX DRILLS

A Speed Contest and the Joburg III.

IN one of the many Mines where Climax Drills are in use the Joburg III was doing good work.

But somebody came along with another drill, and claimed for it that it would work 50% faster than any drill in the mine.

So it was set to work alongside the Joburg III . . . . and this is what happened:—

Somebody's Drill did 6 holes in 5 hours.

The Joburg III did 7 holes in 4½ hours.

The conditions were identical but Joburg III was a better drill.

It's all in the build of the Drill. *Climax Story*

Save your Bills—
Climax Drills
British —— from
Handle to Steel Point

Joburg III is a Cradle Hammer Drill for wet or dry drilling, with automatic rotation and screw feed. Fitted with the famous little spool type valve.

THE CLIMAX ROCK DRILL & ENGINEERING WORKS LTD
4 Broad Street Place London E.C.2. Works - Carn Brea. Cornwall.

(INCORPORATED IN GREAT BRITAIN.)

Local Address : **49, STELLA BUILDINGS,**
Corner Rissik and New Streets, —— JOHANNESBURG.
P.O. BOX 4256. —— Telegrams : "THUMBSCREW." —— Telephone 2794.

The V.F.P. and the Recent Industrial Crisis.

TWO STATIONS ATTACKED—POWER STANDARDS WRECKED—DAMAGE COMPARATIVELY LIGHT—LOYALTY OF STAFF—RESUMPTION OF OPERATIONS.

Naturally the V.F.P. with its five separate power stations scattered along the Reef played no small part in the recent revolutionary outbreak on the Rand. Beyond the wrecking of some standards and unsuccessful attacks on two of the power stations, Brakpan and Robinson Central, no appreciable damage was done. The Acting General Manager, Mr. Bernard Price, and his indefatigable lieutenants, Messrs. Otley and Bryden, spent an anxious and trying time, and are to be congratulated on piloting the main power system of the Rand, with a minimum of loss, through the ordeal of the Rebellion.

Beyond sporadic and mainly unsuccessful attempts to intercept the power system by blowing up standards and air pipes in isolated neighbourhoods, the V.F.P. suffered little during the industrial trouble up to the declaration of the general strike. This last development, however, placed the company in a position of considerable danger and caused the management much anxiety. It must be remembered that the V.F.P. operates five separate stations, viz., Brakpan, Simmer Pan, Rosherville, Robinson, and further afield Vereeniging.

Outbreak of Revolt, March 10.

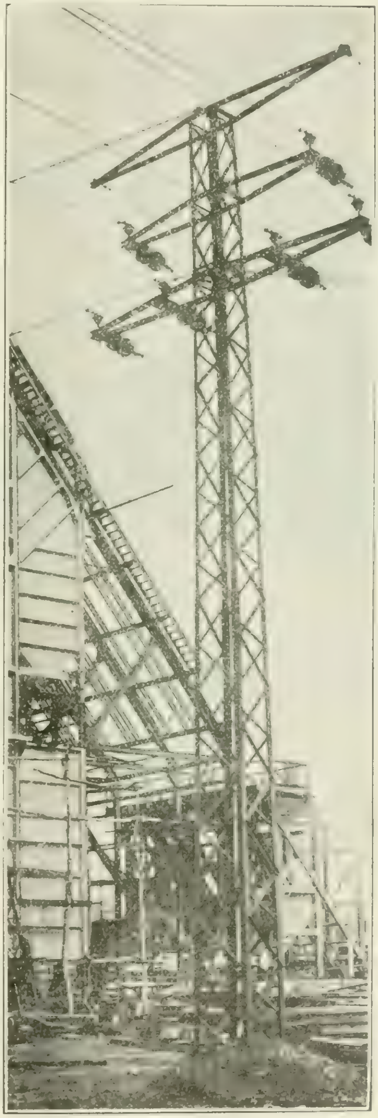
Up to this time the stations had been under police protection. The forces at Brakpan and Vereeniging appeared to be adequate, as they had 80 men with two machine guns and a searchlight at Brakpan, and 50 men were concentrated in the Vereeniging district, where little danger was anticipated. The other three stations, however, were almost entirely dependent upon mobile striking forces stationed at the nearest police station, only a few police being actually present at the stations for patrolling the sites and giving warning in the case of atttack.

The general manager then pointed out that should the strikers obtain possession of the plant they would have no difficulty in creating such damage as would seriously curtail the operations of the mining industry for a long period, quite apart from the possible loss of life and the financial loss to the Power Company. General Beves promised to let the company have the following officers and men from the military forces which were then being called up: For Simmer Pan, an officer and 25 men; for Rosherville, an officer and 30 men; for Robinson, an officer and 35 men.

It was anticipated that these forces would be distributed the following morning, but by mobilising the company's motor cars the management succeeded in transporting the men to Simmer Pan and Robinson overnight. Blankets had not arrived from Pretoria, but filter cloths from the stores at Simmer Pan were utilised at that station, and when the blankets arrived shortly before midnight the general manager took them out to the men at Robinson by car. At both these stations the men were drawn from the Transvaal Scottish and the officers in command had seen long service during the War. The troops for Rosherville, however, did not materialise, as they were urgently required elsewhere.

The Attack on the Robinson Station.

At about 2.30 on the Friday afternoon Robinson station was attacked from the south. Captain Peters, who was in command of the Scottish, and one of his men were woinded at the outset and for a time the position appeared to be quite critical. General Beves was asked for reinforcements, but at the moment he had not a single man available. A few minutes later, however, he 'phoned through that 50 men and an officer of the I.L.H. would be sent. Then a moment later it was reported that the Robinson station had fallen. Mr. Price did not believe this and ascertained by 'phone that the report was incorrect. To avoid all risk of the men being sent elsewhere, the acting general manager despatched Mr. Otley to Marshall Square and he confirmed the surmise that the men had been retained at headquarters. With great promptitude he gathered up a number of cars and a lorry and piloted the forces through Robinson Deep to a point east of the Robinson Dam. Captain Bodley in command of the I.L.H. and Mr. Otley surveyed the position from the top of the dump and were



Typical V.F.P. Power Standard on the Reef.

GARGOYLE

Lubricants

A grade for each type of service

Production's Sly Enemy

FRICTION—

the unseen enemy of production in your plant.

IF FRICTION COULD SPEAK, it would confess, "I am robbing you of power, of production, of profit."

If your machines were human, they would tell you that friction is pain—and pain is the forerunner of trouble.

What will guard you against wasteful friction? Correct lubrication—and that only. The subject is well worth your most serious thought.

We are in a position to reduce the wear and tear on your machinery—to reduce power waste and so increase your useable power.

This increased power means increased production without added power cost. It means improved profit. It will protect your pocketbook from friction theft.

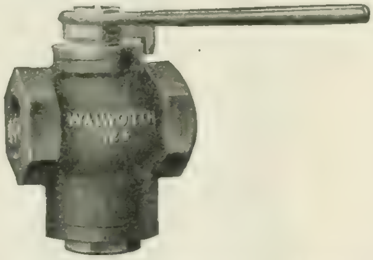
We can bring to bear on your plant the most complete fund of lubricating experience in existence. It embraces thorough engineering knowledge and wide practical experience.

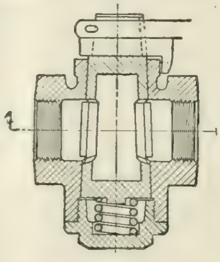
We suggest you get in touch with our nearest branch

VACUUM OIL COMPANY OF S.A. LIMITED

Cape Town
Johannesburg
Pretoria
Kimberley
Bloemfontein
Mossel Bay
Port Elizabeth
East London
Durban
Lourenco Marqes.

WALWORTH SPRING PLUG COCKS





THE SUPERIOR INVERTED PLUG AIR COCK

Tested with Compressed Air *under Water* and recommended for 125 lbs. working pressure. Furnished with either iron or brass plug. Equally good for Steam service or with liquids.

BUILT TO STAND SEVERE SERVICE CONDITIONS

WALWORTH MANUFACTURING COMPANY

Oldest continuous manufacturers in the United States (since 1842) of a complete line of Valves, Fittings and Tools for Steam, Water, Gas, Air and Oil. Originators of the GENUINE WALWORTH STILLSON WRENCH and the KEWANEE UNION.

FOREIGN SALES AGENTS:—

WALWORTH INTERNATIONAL COMPANY, New York City, U.S.A.

OFFICES IN ALL PRINCIPAL CITIES.

P.O. Box 3662. JOHANNESBURG. Phone 3195.

STOCKISTS FOR THE TRANSVAAL:—

The British & Canadian Hydraulic Tube Company, Limited

EXPLORATION BUILDINGS, JOHANNESBURG.

P.O. Box 2572. Telegrams: "CLUTCH" Phones 2333 and 2872

sniped at. They decided to approach the station under cover of the dam wall after clearing a dump which commanded that line of approach. Mr. Otley returned and it was subsequently learned that the relieving forces reached the station by about 6 p.m. without sustaining any casualty.

This saved the situation. The attacking forces had gradually crept to within a short distance of the defended positions, the rebel leader being killed at short range.

The Position at Brakpan.

For four days, namely, from Thursday afternoon to Monday afternoon, the Brakpan Power Station was isolated and besieged. On the Thursday evening Captain McCrae in charge of the police at Brakpan was informed by headquarters that determined attacks on Police Stations were expected with the object of obtaining possession of arms and ammunition, and he was told to hold the Police Station at Brakpan Township at all costs. It appears probable that his valiant defence of that Police Station more than anything else contributed towards the safety of the V.F.P. plant. During the dastardly attack and murdering at the Brakpan Mines between 8.30 and 9.30 a.m. several attempts were made by the strikers to entice Captain McCrae to weaken his force at the Police Station. For three days the defending forces were left without food and with very little water, the supply to the Police Station having been cut, yet they repelled all attacks and held on until they were relieved on Monday. This is but one of the many instances where calamity was narrowly averted by the bravery and loyalty of the police.

Attacks Expected.

From that time onwards attacks on the Power Station were continually expected. Alarming rumours were constantly coming through from natives and others and by telephone from the neighbouring mines. The acting general manager did his best to reassure the besieged men, but such arguments as he could use afforded little consolation when one is surrounded by armed desperadoes already guilty of murdering in the most appalling manner officials and men who had surrendered to them.

The Brakpan Relief.

There was no concerted attack on the Brakpan Station, but it was sniped for a time on the Friday morning. On the Saturday food began to run short and had to be rationed. Rest and sleep were virtually impossible to men or women owing to the suspense and mental strain, but there was no semblance of panic; on the contrary, every man and woman on the property remained calm and cheery. The arrival of loyal commandos from the east and from the west relieved the station at 1.30 p.m. on Monday afternoon, and thanks to the good offices of the Railway Administration a consignment of food and drink was delivered by armoured train at about 6 p.m. that evening.

At Rosherville.

At Rosherville the situation was full of anxiety during Friday and Saturday, for although no Red commando made its appearance rumours of impending attacks were reported. At both Rosherville and Simmer Pan there were alarms due to sniping in the neighbourhood, but no attack. The presence of troops greatly relieved the mental strain of the officials and their families, and at Rosherville the station was at the mercy of the commandos until the Wit. Rifles arrived on the Saturday evening.

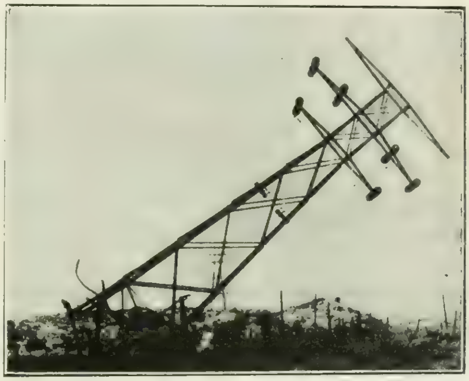
Vereeniging.

At Vereeniging nothing untoward occurred and the police were relieved by a loyal commando at an early period of the revolt. Several of the men at work in the station had their families resident on the Rand and were caused the gravest anxiety for their safety.

In summing up the position, Mr. Bernard Price says: "I cannot speak too highly of the fine spirit displayed by all men who remained in the service of the company and their wives and families during this period of strain. Everyone faced the situation with calm determination and whole-hearted co-operation was shown between all ranks. Those who were located on the station site at Brakpan probably experienced the severest and most prolonged strain, but a smaller number of persons at Robinson had to face the ordeal of an actual attack which for a time appeared as if it might be successful. At the other stations the strain though not so intense was keenly felt, especially at Rosherville prior to the arrival of troops. The district staff of the distribution department also deserve special mention. They were scattered along the Reef in danger zones where special protection was quite impossible, and one man was imprisoned in Fordsburg during the fighting there."

Thanks to Staff.

An official notice issued by the acting general manager states: "The board of directors in London and Major Bagot in India have cabled asking me to convey to members of the staff their high appreciation of the loyal manner in which the interests of the company have been served under difficult and trying conditions during the recent strike and revolutionary outbreak. I desire to associate myself with this expression of appreciation and to thank all employees who have served the company so well for their devotion to duty and willing co-operation (without which the company would have been unable to maintain supply for meeting the essential needs of the mining industry) as also those who joined the Government forces."



V.F.P. Standard wrecked by the revolutionaries, but which it has not yet been necessary to repair.

It only remains to add that the employees are being gradually taken back on terms in conformity with those of the Chamber of Mines. It is expected that the requirements of consumers will steadily increase, though several months may elapse before normal outputs are reached, as the shortage of 50,000 natives on the mines can only be made up slowly.

TRANSVAAL G.M. ESTATES.

The following are the particulars of the output for the month of March:—Central Mines: Tons crushed, 12,400, yielding 4,036 fine oz. Elandsdrift Mine: Tons crushed, 1,770, yielding 1,056 fine oz. Vaalhoek Mine: Tons crushed, 2,120, yielding 605 fine oz. Estimated value of month's output, £26,314. Estimated profit for month, £3,766. Note: The gold output for the month is valued at £4 12s. per fine oz. net after allowing for exchange and realisation charges.

HADFIELDS Ltd.

Workmen employed during the war, over 15,000.

Works area over 200 Acres

East Hecla and Hecla Works, Sheffield, England.

COMPLETE STONE BREAKING AND ORE CRUSHING PLANTS

RENEWALS AND WEARING PARTS SUPPLIED FOR EVERY KNOWN MAKE OF MACHINE.

Mining Requisites

Special Forged Steel Balls for Ball and Tube Mills, Shoes, Dies, Grizzley Bars, Crushing Rolls, Jaw Faces, Cones, Concaves, Wheels and Axles, etc.

Manufacturers of

TRADE HECLA MARK

Steel Forgings in the rough, rough machined, or finished for marine and other engineering purposes, of any analysis and to pass any required test.

Steel Castings of every description up to 30 tons in weight.

ERA

Trade Mark

Sole Makers of HADFIELD'S PATENT

MANGANESE STEEL

The Supreme Material for the Wearing Parts of Stone Breaking and Ore Crushing Machinery, etc

Head Office for South Africa:
46 & 47, CULLINAN BUILDINGS,
JOHANNESBURG.
'Phone 5900 Tel. Add.: "Hecla."

Bulawayo Agents:
WHITMORE & JACKSON,
17 & 18, Agency Chambers.

Salisbury Agents:
P. PEECH & CO.,
Angwa Street.

Natal Agents:
THOMAS BARLOW & SONS (S.A.) Limited.
Smith Street, Durban.

BELL'S UNITED ASBESTOS (Lond.)

AFRICAN AGENCY, LIMITED,

Telephone No. 345, Central, 24-26, CHORLTON CHAMBERS, HARRISON ST., JOHANNESBURG. P.O. Box 2642.

SOLE AGENTS IN SOUTH AFRICA FOR

BELL'S UNITED ASBESTOS CO., LTD., LONDON.

(OLDEST ASBESTOS MANUFACTURERS IN THE WORLD).

VIEW OF GENERAL ABESTOS WORKS, HAREFIELD, MIDDLESEX.

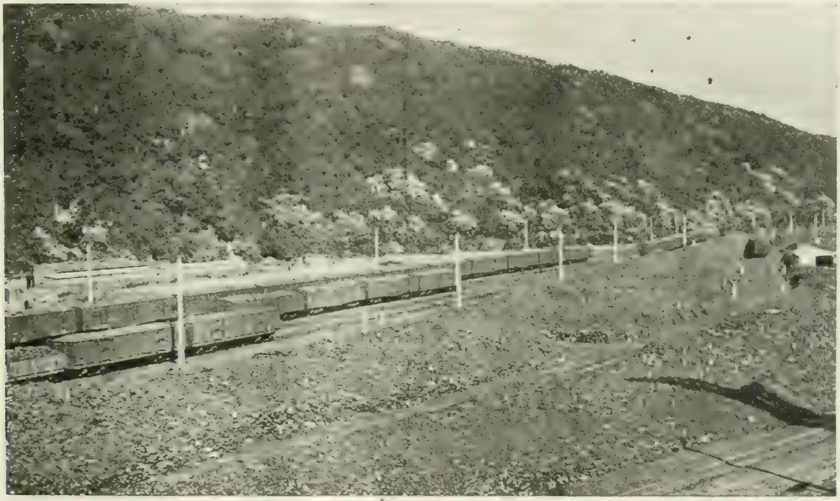
"GLADIATOR" ASBESTOS CEMENT BUILDING MATERIALS.

Over 170 million square feet "Gladiator" Building Material supplied the British Government during the War for Army Hutments, Hospitals, Aerodromes, Munition Factories and the like.—Enquiries invited.

Government and the Coal Mining Industry.

OPPOSITION TO NEW COAL GRADING BILL—SHIPPERS, NATAL AND CERTAIN TRANSVAAL INTERESTS ANTAGONISTIC—WILL THE MEASURE BE SHELVED?

A few weeks ago we printed the draft of the new Coal Grading Bill which the Government has introduced into the present session of the Union Parliament. Since the draft appeared we have been at pains to collect the views of the various interests concerned with the Bill and to ascertain what fate it is likely to meet with in Parliament. Most people believed that the Bill followed closely on the lines of the report of the Coal Commission of last year, and that its terms would therefore meet with little opposition. That, however, does not seem to be quite the case, and we find the Bill has in certain quarters aroused quite a storm of opposition (which, curiously enough, seems to have been lacking when the Commission made its report) that seems likely to delay, if not indefinitely postpone, the passage of the measure. The opposition arises mainly from three quarters—certain coal shipping people, most of the Natal collieries, and certain Transvaal coal interests. It is true that the Transvaal Coal Owners' Association seems to regard the Bill passively, but even that important body displays no great enthusiasm over it. The fact is—upon which all parties seem agreed—that the coal trade of the country to-day stands most in need of reduced mining costs and lower railway rates. The opponents of the present Bill declare it will have just the contrary effect—it will create monopolies, eliminate competition and add to the cost of shipping coal by establishing an expensive grading staff which must in the long run be paid for by the industry



Coal at the Bluff, Durban.

Some Shippers' Views.

Interviewed by a representative of this paper, a gentleman interested in shipping coal at Delagoa Bay, Durban and to a smaller extent at Capetown, declared himself entirely opposed to the Bill. It is only fair to state that this authority had strenuously opposed the findings of the Coal Commission and, indeed, we gave his views considerable prominence at the time of the publication of that report. The present Bill, he declares, goes even further than the terms of that report and is open to even more criticism on the score of granting the Government arbitrary power of interference with the industry and still further entrenching the existing monopolies in the trade. It is strongly held by this opponent of the Bill that as far as the Transvaal is concerned the Bill will create a monopoly for the associated collieries, and will kill the bunkering and export trade of the Breyten district coal mines. A second and equally strong point made is that conditions in the coal trade have now so altered that shipowners do not need the grandmotherly protection proffered by the Bill. The shipowner is expert in the business of coal purchase; he is to-day in a unique position to pick and choose what coal he requires, and he can insist upon getting what he purchases, i.e., that the coal he buys is up to sample. Government interference, with all it means in the way of red tape and expense, is none too welcome to the big coal shippers and agents in London, and they are bound to regard the Bill with suspicion and disfavour.

The Natal Colliery Owners' Views

Natal colliery owners, on the whole, seem opposed to the Bill. At the annual meeting of the Dundee Coal Company the other day, the acting chairman, Mr. O. Siedle, said: "The Coal Grading Bill, which has been sprung upon us at short notice, might be fraught with serious results to the coal industry if allowed to pass in its present form. Unless certain clauses are drastically dealt with, the Bill, though designed to help the railway and establish the coal export on a sounder basis, would be a menace to the export trade if the control it was empowered to exercise was authorised. Steps are being taken to call the attention of our legislators to this phase of the Bill. Mr Smith did not give details of his objections to the measure. This question of grading is one upon which the various interests composing the industry differ considerably, and it is true that the Bill provides that only in the event of these interests being unable to come to agreement, as to the appointment of a Grading Committee, will the Government take the right to step in and make the appointment. More objectionable are the provisions which give the Railway Administration power to requisition the coal of any colliery on the ground that it has been unable to enter into satisfactory contracts for its requirements. The Bill gives this power of requisition over any colliery producing suitable coal in a proportionate extent to its output, and makes no provision for the contingency that a colliery may be already under contract to deliver the whole of its output to some other buyer. As the railway also takes to itself power to help itself to coal in transit at any moment of temporary shortage, this provision would appear unduly drastic. The railway, in fact, practically demands the right to dictate the price at which it shall purchase its coal supplies. Doubtless these and other points in the Coal Grading Bill which demand careful consideration will be argued out in the House. From what we can gather from other sources, the general opinion of the Natal coal owners appears to be that while they approve of grading on principle, they take exception to the powers bestowed on the railway and many other details covered by the Bill. In fact, it does not find much favour amongst the leading colliery people in Natal because doubtless they are not over-anxious to have independent tests made of their coals, the quality of which they have been trying to "boost" up so largely for years, and also because the expense of grading and testing will have to be borne by the collieries themselves, which will add another tax to the struggling industry and thereby be still further throttled by an "octopus Government." Natal coal owners consider that the most obnoxious feature of the Bill is that it appears to be designed to give Government the practical control of the whole of the coal trade and the machinery for carrying out the provisions of the Bill, which if passed into law will create another Government Department, for which the coal owners will have to bear the cost.

Undesirable Publicity.

Another point is that the complete disclosure of the analysis of the whole of the Transvaal and Natal coalfields under control of Government agents might not prove to be too creditable as far as the export trade is concerned when the question of quality of the so-called first grade coals is held up for comparison with the export grade of Welsh and English coals, and shipowners and purchasers of coal might have something to say in the matter when placing their contracts. It has been suggested that the most feasible method for grading should be on the lines of other countries, such as those observed in Great Britain and the United States, by nominating the coal as coming from certain districts, say for, in the Transvaal, the Witbank, Middelburg, Springs and other districts, and for Natal, say the Newcastle, Hatting Spruit, Dundee, Elandslaagte, Vryheid and other districts.

Another important factor about grading is that in carrying out the tests it is a well-known fact that the coalfields of Natal are far from uniform as regards quality. This applies even to individual districts, and one can go further and say that it also applies to individual mines. The danger in this is that a Government grading official, for instance, might carry out a test of a mine on a comprehensive scale and give out a result as the average grade of the mine on a given date, and a month or two after the quality might easily be better or worse, and if the coal was then sold on the grading official's original certificate there might easily be an actual variation in the quality. Again there is the fact that most mines have good and bad districts on the same seam; other mines again work two seams having different qualities, and while it might be expected that a colliery would do its utmost to confine the extraction of coal intended for export to the best district or the best seam, with the object of maintaining the quality as "top grade," this would require a good deal of supervision on the part of Government officials to carry it into practical effect. Without attempting to go deeper into the matter, it is submitted that the opinions quoted make it desirable that the new Bill should be carefully debated before it becomes law. Plainly the Bill in the committee stage merits detailed examination of its several debatable provisions, and it is highly desirable that all the important interests affected be given ample opportunity to air their conflicting views. For ourselves, we can cordially subscribe to the view that what the coal industry of the country wants most of all is lower railway rates and lower costs of production.

Union Corporation Finances.

The accounts of the Union Corporation, Ltd., for the year ended December 31, 1921, show a realised net profit of £179,517, and including £68,355 brought forward from 1920, there is an amount of £247,872 to be dealt with. The directors have decided to add £30,000 to the reserve account, and have declared a dividend of 16 per cent. (2s. per share), involving an amount of £140,000, and leaving the sum of £77,872 to be carried forward.

When communicating with Advertisers
kindly mention the
SOUTH AFRICAN MINING AND
ENGINEERING JOURNAL.

A New Method of Treating Surface Residues for Gold.

PRACTICE AT THE MAY CONSOLIDATED—SOME USEFUL POINTS FOR SMALL MINE WORKERS.

(By a Special Correspondent).

There is undoubtedly a very large quantity of ore awaiting treatment on and around the surfaces of derelict mines along the Rand. During the early days of the industry some of the outcrop mines contained ore that assayed ounces to the ton of rock mined. Many of them were on a small scale New Modders or even better. The present-day 6 dwt. proposition was then considered unpayable and was frowned upon by engineers, who preferred to talk in terms of ounces rather than of dwts. Nowadays we have learned the value of lower grade ores when properly treated, and to-day we can and do make profits on a grade of ore once banned as useless for economic mining.

Metallurgy of the Pioneer Days.

The metallurgical methods of the early days also left very much to be desired from the point of view of profitable treatment of the ore. The dependence on the amalgamation plate alone for recovery of the gold was productive of what would to-day be serious losses, since only a modicum of the contained gold was and is recoverable by that method. We have since then moved forward so fast that to-day's practice is to eliminate the amalgamation plate, and by reducing the rock to the fineness of clay—the all-sliming process—to recover all the gold by cyanide treatment alone, and in this way to obtain a 99 per cent. efficiency; in other words a perfect recovery. One result of the former wasteful methods of extraction—coupled, one must confess, with very careless mining—was to create on the mine surface large quantities of gold-bearing ore dumped promiscuously and with no promise of future treatment. These dumps were very often afterwards covered over with refuse of all sorts, including old iron, coal, ashes, stones, etc., etc.; in fact they resembled nothing more than the refuse dumps of the Municipality. It is quite clear that such refuse heaps, if treated under ordinary conditions, would fail to yield profitable results, and unless a new method was devised for dealing with them they would remain rubbish heaps only for ever.

High Grade Residues.

When it is remembered that the gold contents amount in certain cases to as much as 10 dwts. per ton it will be seen that the matter of recovering this gold is one well worth serious consideration. Now, as always, "necessity is the mother of invention," and the need for a radical departure from routine has resulted in the discovery of a means for treating the ground so as to enable the gold to be recovered from the concentrates so produced by ordinary assay methods.

Practice at the May Consolidated.

This new idea may be seen to-day in actual operation on the old May Consolidated Gold Mine. This mine was once a high grade proposition, and its outcrop ore averaged over an ounce recovery. In due course it exhausted more or less its claim area, and finally dropped out of the running as an independent producer, becoming merged in the mines on its dip. The known richness of its ore led many people to attempt the treatment of the surface stuff, and all were fairly successful in making a profit from their work. Previous to the present owner taking over the property no fewer than three previous owners had treated the ground with satisfactory results, and it was reasonably assumed that ground so treated could not be made to give profitable results for the fourth time. This is, however, exactly what has happened in the present instance. Incredible as it may appear, the actual recovery value of the ore now being treated is 7½ dwts. out of a total estimated value of 10 dwts. per ton.

The Plant.

The plant consists of a four-stamp mill, Natal type, each stamp weighing 650 lbs. The ground is collected by boys and brought to the mill, where it is dumped and fed into the mortar-box in the usual way. No amalgamation plates are used anywhere. After leaving the mortar-box the pulp is run along a short length of launder to a table, over which it passes, and from thence through another launder and again over a second table. On its way it leaves behind it the heavy material in the form of concentrates, and the residue falls into a sump and is after draining deposited in heaps wherever convenient. The tables are built up in sections on a frame. They are made chiefly of flooring boards with slightly turned up edges and are covered with ordinary gunny sacks, i.e., mealie bags, to which the concentrates adhere. These sectional parts are removable at will, and two boys deal with them as often as they need attention, as follows: after removal from the framework on which they lie they are carried to a tank and water is soused over them to remove their contents, which latter sink to the bottom of the tank and in due course are removed, bagged and sent to the sand smelting works for final treatment. The average value of the ground before milling is 10 dwts.; the average value of the residues after treatment is 1½ dwts., showing a recovery value of 7½ dwts. per ton or 75 per cent. The whole secret of success lies in the concentrating tables. The idea is novel and is the subject of an application for patent rights by the inventor. Its raison d'etre is somewhat as follows: An iron framework is first made of ordinary 2 in. by 2 in. angle iron bars, so erected as to resemble when constructed nothing more than a small electric power standard. This is laid down sideways so that the difference in height between the bottom and the top of the framework represents the grade of fall for the flowing pulp. This framework rests in turn on two ¾ in. round steel bars fixed transversely to the slope of the framework; four small wheels, two at each end of the frame, form the connecting link between it and the bars. It will be seen then that the framework has a longitudinal movement only along the steel bars by means of the small wheels. Movement is imparted to the framework by means of two connecting rods fixed to it at one end and at the other end to a small wheel fixed on to line shafting carried from the mill. The whole of the plant is run by a Crossley high speed paraffin engine, which gives excellent results on a very low average oil consumption. It is particularly claimed for this invention that it recovers fine gold as well as coarse in the concentrates. Wilfley tables were originally tried here, but did not give good results in working, as no fine gold was recoverable by this means. From what has been stated above regarding the nature of the ground to be treated, it is seen that the presence of impurities of many kinds made ordinary methods impracticable. If copper plates are used the sulphuric acid and other impurities in the ore attack the plates. Coal scours the mercury and causes it to run off the plates. In the cyanide tanks coal and ashes prevent proper cyanidation of the gold, while the presence of acids adds to the disadvantages incurred. The ordinary methods of adding lime, etc., are useless to overcome the deleterious elements present, and consequently the routine of ordinary practice is inapplicable. All these things have been tried and have invariably failed to recover the gold.

Worthy of Attention by Small Mine Workers.

The success of the new method is its own justification, and the fact that no matter what the foreign elements in the ore treated the recovery of the gold in the concentrates is sure makes it specially applicable to the extraordinary conditions prevailing as regards these old deposits. It may be further pointed out that the gunny sack or mealie bag is preferable to blanketing or corduroy as a means of retaining the concentrate. Both these latter after trial were discarded as not fulfilling their purpose, and the mealie sack has taken the place of the much more expensive materials and with infinitely better results. The process is therefore both simple and inexpensive and is well worth the attention of small mine workers

Letters to the Editor.

A CRITICISM OF THE NEW STANDARD STOPE LAY-OUT, AND A SUGGESTED ALTERNATIVE.

To the Editor, *S.A. Mining and Engineering Journal*

Sir.—In the *Mining Journal*, dated 1st April, there appeared an article entitled " A New Standard Stope Lay-Out," in which the author suggested that a large saving in cost per fathom could be effected by adopting a system of " Long-Wall Stoping "—or advancing the stope face up the dip—and he gives certain reasons for his assertion, which, I contend, do not bear investigation.

His principal idea, it appears, is to economise in rails and track fittings; but if you look upon such expenditure as " capital "—since rails once put into a mine can be used time and time again and will outlive several stopes—the actual saving is very small indeed; whereas the loss of efficiency, as I propose to show, is considerable.

The first difficulty in opening up a new stope is to get rid of the broken ground which is lying in the confined space of the winze, since it is not possible to attack it from more than one end, unless the footwall crosscut system is employed; but in this particular instance the author proposes to open his stope by taking a strip 40 feet wide off the north side of the drive; assuming that 25 per cent. of this ground is blasted into the drive, he will have about 4,000 tons to deal with by end-on lashing only, which would take about two months to accomplish, and few mines have their development so far advanced that they could afford to stop any drive and probably a raise and winze as well for that period every time a new stope is to be opened up.

The next point is the lashing efficiency. Three machines at 2·6 fathoms per machine shift will break about 117 tons per day and provide work for 16 lashing boys; this means eight cars working on the four tracks, probably one each on the top two tracks and three each on the two lower ones, but as the capacity of boys varies this is sure to lead to inefficiency, as the best boys will have to slow down to the pace of the worst pair, while the suggestion of joining each track to the one below is not practicable. It is quite all right for the top track, but what about the boys on the lower one with the full cars from the boys above continually blocking their empties coming in?

Support of Workings.

Here again the suggestion to abandon the worked-out portion of the stope, and to allow it to cave at will, is sure to bring trouble, since the hanging sagging in the centre but supported by the stope face at the top, and the south side of the drive below, will break off at these two solid supports and give serious trouble on the face and in the drive.

The experience on the Far East Rand is that—provided pillars are left systematically and packs are built at regular intervals there is no great trouble in keeping the stopes open till all the rock and the material has been removed.

Machine Efficiency.

I cannot treat the assertion that the machine efficiency is going to bound from 1 fathom to 2·6 fathoms per machine shift—as serious. The two reasons I have not already dealt with can be passed over by saying that the correct way to drill over a bench is across the fracture planes, and that a miner who can carry good benches along the strike of the stope can carry equally good ones down the dip.

Ventilation.

The system is quite good, but it can be arranged just as easily in any other form of stope by building the packs as suggested along the bottom and by leaving a drive pillar at the top of the stope, which can be " holed " at intervals, and the air current made to travel up the face.

The Footwall Crosscut Method.

Under this method the connection on reef is made on the true dip, and a crosscut is driven in the footwall parallel to the connection, with box holes up to the reef at intervals. These intervals are multiples of 30 feet, because the tracks are usually laid at that distance apart and are determined by (1) the length, and therefore the capacity, of the box; and (2) the tonnage per fathom expected from the stope. The fundamental principle is capacity whereby should any small mishap occur on the tramming road, the lashing in the stope can still go on. It is the practice to put the first three shallow boxes up at intervals of 30 feet, the next two at 60 feet, and after that at 90 feet intervals. Two or three tracks can be led into one box by cutting away in the footwall or building up in the hanging. If the dip of the reef is so steep, or the length of the back so great, that the boxes begin to attain a greater vertical length than 60 feet, it has been the practice to drive an intermediate crosscut from the top of the last box, thus dividing the stope into two portions (or steps), but as this means double handling, it is now proposed to put up a footwall raise 30 feet below the reef and parallel to the dip, the rock will then be run into the trucks and lowered to the level below by gravity. These crosscuts and box holes may seem a great initial expense, but it has been conclusively proved that the increase in lashing efficiency more than compensates, and after all it is a very simple calculation to decide if the capital outlay is warranted by the cost per ton saved over the tonnage of the block.

The great advantages of the crosscut system are: (1) In opening up a new stope the broken rock can be attacked from any number of points simultaneously and by working a night shift for a short time while the area is restricted all the rock can be removed before the commencement of the next drilling shift. (I can actually point out a stope which has only been working for eight months, but in which 1,503 fathoms have already been broken by one man with three machines.) (2) After the stope is running, the lashing boys are independent of any small mishaps or delays which may occur outside their control, there is no waiting for empty cars, as there usually is with the winch system, and each pair of lashing boys is independent of any other boys in the stope. (3) The number of cars required to equip the mine is greatly reduced. (4) It is quite possible, if necessary, to put any number of machines to work consistent with the length of stope face, and to deal with the ground with ease. The shape of the stope face should be such as to allow a maximum number of trucks to operate, each on its own track, and, allowing for pillars, should be 12 feet long for each machine engaged thereon, and provided that high pressure air, good water, and plenty of steel is supplied, there is a far better chance of breaking 2·6 fathoms per machine shift in a " Breast " stope than there is in a " Long Wall " stope.—Yours, etc.,

R. L. TIMPSON.

Van Ryn Deep G.M. Co.
5th April, 1922.

The Mining Activities of the "T.C.L."

DISAPPOINTING TIN INTERESTS—COAL THE ONLY BRIGHT FEATURE—SOUTH-WEST INTERESTS—GENERAL SURVEY OF MINERAL POSSIBILITIES.

The "T.C.L." owns, inter alia, the full rights over 2,256,611 acres and the mineral rights over 1,330,539 acres. In the course of their review of the mineral interests of the company, the directors, in their annual report for 1921, state:—Generally speaking, the year has been disappointing. The one bright feature has been furnished by the Van Dyk's Drift coal property in the Middelburg district, where the preliminary boring work done in 1920 has been followed up by intensive boring. The results have been highly satisfactory. In all 26 boreholes have been put down, so placed as to explore thoroughly and efficiently the whole area. The total footage drilled amounted to 5,486 feet, at a cost of £9,144. The following figures give the estimated tonnage of recoverable coal contained in the various seams underlying the farm:—

Seams.	Tons of 2,000 lbs.	Evaporative Power, lbs./lb.
No. 2 or Main Seam	45,000,000	13 and over.
No. 2 or Main Seam	26,000,000	12·5 to 12·9.
No. 1 or Bottom Seam ...	8,200,000	
No. 2 or Main Seam	2,000,000	12·0 to 12·4.
No. 1 or Bottom Seam ...	12,300,000	
No. 4 Seam	12,300,000	11·5 to 11·9.
No. 1 or Bottom Seam ...	20,000,000	11·0 to 11·4.
No. 4 Seam	4,500,000	
No. 5 Seam	11,800,000	9·7
Total	142,100,000	

It will be seen from the above table that, in addition to a large quantity of other saleable coal, it is estimated that Nos. 1 and 2 seams will produce no less than 79,200,000 tons of high grade export coal, varying in evaporative power between 12·5 lbs./lb. and 13·67 lbs./lb. This coal is an excellent bituminous coal. The analyses show a low sulphur and ash content and a high nitrogen percentage. It compares more than favourably with the best coal being mined to-day in the Transvaal. The company therefore has in Van Dyk's Drift an asset of great potential value. The present unfavourable circumstances of the coal trade, notably the absence of any certain market for export, and the lack of adequate railway and harbour facilities, preclude any programme of immediate development; indeed, it may be some years before a suitable opportunity offers for the development of what should be one of the finest coal propositions in the country.

Groenfontein.

At the Groenfontein Tin Mine milling operations were stopped at the end of February, as the low price of tin made it impossible to run at a profit. Upon the closing down of the mill the staff was reduced to a minimum and operations restricted to the search for and development of payable ore bodies. These efforts met with only moderate success. At the close of the year the ore reserves accumulated at grass were estimated to contain 67 tons of 70 per cent. concentrate. The concentrate produced during January and February, while milling was proceeding, amounted to 43 tons. The loss on the year's working amounted to £11,019, against which £4,000 had been provided out of the 1920 accounts for exploratory work, leaving £7,019 chargeable against this year's accounts. There are, of course, the ore reserves at grass, above referred to, from which a profit will accrue when they are treated in 1922. The policy adopted is to accumulate sufficient ore at grass to enable the mill to be run on a fairly large scale and to crush the ore in the shortest possible time. The mill is then closed down again for further ore to accumulate. By this means considerable economy in the running of the plant is effected, so that a profit should be made even at the present low price of the metal. It has become obvious for some years that production on the scale attained in the past cannot be expected, and an opportunity was seized to dispose of the "Premier" gas engine plant at a satisfactory figure. The remaining plant will be sufficient for all ordinary purposes. The price of metal has been depressed throughout the year, and there are no indications of a recovery just yet. The tin prospect on Welgelegen No. 357, Waterberg, has been steadily opened up during the year. The ore developed at the end of the year was estimated at 5,000 tons of an average value of 2 per cent. metal. Native labour has become very scarce, and recent developments point to the narrowing of the ore body. This is possibly only a temporary condition, but it indicates the advisability of suspending operations until the market improves, or in any case until labour becomes more plentiful. Opportunity will be taken when milling operations are resumed at Groenfontein to make a reduction test of the Welgelegen ore, the two farms being in the same district. Further investigations of the tin occurrence on Allemansdrift No. 222, Pretoria, in the early part of the year yielded very disappointing results. Operations therefore were discontinued and the option abandoned.

Tributes.

There has been a considerable falling off in the revenue from tributing owing to economic conditions and the depression in the metal markets resulting therefrom. Operations at the Penge Asbestos Mine were severely curtailed owing to lack of market for the product. During the latter part of

Robert Heath & Low Moor, Ltd.,
Sole Manufacturers of
LOW MOOR
IRON AND RIVETS.

SPECIALITIES:
COLD BLAST PIG IRON
HAULAGE GEARS
PUMPS
WINDING ENGINES
OVERWINDING GEARS
PIT TUBS
COLLIERY PLANT AND BUILDINGS
AXLES AND FORGINGS
DROP STAMPINGS
CHILLED AND GRAIN ROLLS
CASTINGS UP TO 20 TON EACH

SOLE AGENTS IN SOUTH AFRICA FOR PRODUCTS OF
LOW MOOR WORKS:
SAMUEL OSBORN
(S.A.), LIMITED,
'Phone 4373 JOHANNESBURG.

the year production was [illegible] and work re-[illegible] to repairs and [illegible] to the mine [illegible] dam. The output for the year was 800 tons, and the royalty received amounted to £2,741 14s. 2d. The [illegible] Zinc Mine closed down in April on account of the low price obtainable for zinc, and the outlook is not encouraging. 675 tons of concentrate were produced and [illegible] the company amounting to £[illegible] 15s. 2d. The Mutue Fides Tin Mine, [illegible] closed down at the end of February, 1921. In the middle of the year the company [illegible] on tribute on its usual conditions. The tributor produced 33·146 tons at 70 per cent. concentrate, the royalty amounting to £422 2s. 9d. Owing to the depressed condition of the tin market the tributors of the Weynek Tin Mine did not feel justified in continuing their expenditure on development, and early in the year the company agreed to their suspending operations under the circumstances. Minimum royalty, amounting to £200, was received prior to closing down. The Olifants Tin Mine continued its operations on a very small scale during the year, and produced 20 tons of 68 per cent. concentrate. No royalty accrued to the company. The Montrose Gold Mine worked continuously and satisfactorily throughout the year. It produced 1,705 fine ozs. of gold, the royalty received by the company being £993 19s. 8d. The tributors of the Rietfontein Gold Mine were not so successful, and met with many difficulties and set-backs. Their output amounted to 283 tons of pyritic concentrate, and the royalty amounted to £600. The total result of the company's mining operations for the year has been a loss of £8,233 9s. 1d., made up as follows: Loss on Groenfontein, £7,018 19s. 8d.; loss on Mutue Fides, £1,032 19s. 2d.; prospecting expenses—Welgelegen, etc., £7,068 13s. 2d.; total, £15,120 12s.; less royalties, £4,081 17s. 7d.; less Groenfontein gas engine plant sold, £2,805 5s. 4d.—£6,887 2s. 11d.; total loss, £8,233 9s. 1d.

Mineral Investments.

The company has acquired an interest in the Kohero Tin Mines, Ltd., formed to exploit a tin-bearing area in South-West Africa. The chief object of the flotation was to obtain a pied a terre in that country from which further investigations into its mineral possibilities could be made. A certain amount of alluvial tin-bearing ground was located, and this will be treated. On the whole, however, the venture has proved disappointing, its further prospects are discouraging, and it has accordingly been written down to a nominal figure. A dividend of £533 5s. was received from the Swaziland Tin, Ltd., and the same has been utilised to write down the investments. At the 31st December, 1921, the company held 7,110 shares, standing at £2,445 15s. 6d. A final liquidation dividend was received from the Fairview (T.C.L.), Ltd., amounting to £7,371 1s. 10d.

Mineral Survey.

A general survey of the mineral possibilities of the large area over which the company owns mineral rights has been undertaken by the company's consulting engineer, Mr. Alan Stuart, in conjunction with Dr. E. T. Mellor, consulting geologist to the Central Mining and Investment Corporation, Ltd. The objects of the survey are threefold, viz.: (1) To collate into a convenient and reliable record all the information which has at different times and by various means been amassed as to the geology and mineralogy of the company's interests. (2) To form the ground-work for further programmes of active prospecting operations in those areas which possess known mineral possibilities. (3) To assist in formulating a policy to be followed as to the disposal or retention of mineral rights over farms of which the company sells or has already sold the surface rights. In connection with this survey Dr. Mellor traversed the North-West Waterberg, and Mr. Stuart made an examination of some of the company's farms situate in the Central Waterberg in formation similar to that in which tin has been found elsewhere in the Transvaal. No discovery has resulted from this examination, though very useful information as to the extent of coal-bearing measures in the North-West Waterberg was accumulated by Dr. Mellor.

MINES DEPT. EXAMS.
CERTIFICATES AWARDED INSTITUTE.

MANAGERS' EXAMS., September, 1921, January, 1922.

We obtained 15 out of a total 22 certificates awarded in South Africa

	Metal	Coal	Totals
Ours	9	6	15
Rest of S.A.	4	3	7
		Total for S.A.	22

OVERSEERS' CERTIFICATES (Metal).
So far as we know we have only had 6 failures during 1921, and secured two-thirds of the certificates issued in S.A. during the past two years.

TUITION (Metal or Coal) by class, correspondence or privately
Mining Institute (Prof. Yates),
St. James' Mansions, Eloff St. Johannesburg

Sheba Mining Policy.

NEW SHAFT TO BE SUNK.

From Mr. C. B. Kingston's report on the future work of the Sheba, we take the following passages:- Zwartzkopje mine: The drive east at No. 10 level exposed the following results during the previous week: At 135 ft. 11·7 dwt. over 74 in. At 138 ft. 12 dwt. over 53 in. At 141 ft. 9·2 dwt. over 80 in. There is still good ore in the face of the drive. The No. 2a borehole cut 21 in. of ore assaying 46 dwt. on the 17th January. There is a very encouraging result, although the ore on either side of the rich section contained very little gold. Another borehole was started at once at a convenient point between the No. 2a borehole and the No. 2b winze. The object of this new hole is to check the rich strike and to provide more data for calculating the depth at which ore may be expected in the No. 1 borehole, which was stopped at a depth of 212 ft. The position of the rich ore in the No. 2a borehole indicates that the No. 1 borehole has not been carried down far enough to reach the ore. I have to-day received a telegram from the mine, stating that the No. 3 borehole cut 16 in. of ore, assaying 13 dwt. 19 gr. between 4 ft. 8 in. and 6 ft. This is very encouraging.

Development below the 10th level cannot be carried on economically by the present means at our disposal, and it has therefore been decided to sink an inclined shaft in the slate below the ore channel. This shaft is laid out in such a position that it will always be near the ore channel, so that deeper ore bodies may be reached with a minimum of cost and labour. As the shaft will lie beneath the ore bodies the ore can be shot down from the stopes into bins at the shaft and handled with less expense than in the past. This method of dealing with inclined ore bodies has been followed for some years at the Lonely mine in Rhodesia with complete success. The new shaft is being started from a convenient point in the 7th level, about a thousand feet west from the Zwartkopje main shaft. It is with the object of sinking the new incline shaft and connecting it with the Intombi that a reduction of expenditure from £3,600 per month to £2,200 per month has been recommended for the present. When the incline shaft has been carried down below the 10th level Zwartzkopje, active development of the ore bodies can be resumed under the most economical conditions.

Office Note: In addition to the 59,785 tons of ore reserves in the Zwartzkopje, Intombi and other sections and the 15,200 tons in the Great She and Royal Sheba blocks referred to in the company's circular of 30th January last the general manager reports, a further 25,000 tons of ore indicated in the Zwartzkopje mine which are not sufficiently developed to enable him to estimate the value.

THE BUSY MAN'S PAGE.

What to Read in the Technical Press.

Mining and Metallurgy.

Modern Mine Fans.—Mining Magazine, March, p. 146.

The New President of the Institution of Mining and Metallurgy Mining Magazine, March, p. 133.

Roasting of Zinc Blende Ores.—Mining Magazine, March, p. 139.

Coal.

The Inorganic Constituents of Coal. Iron and Coal Trades Review, March 10, p. 339.

Lignites and Brown Coals.—Colliery Guardian, March 10, p. 600.

Engineering.

Mechanical Stokers in South Wales.—Iron and Coal Trades Review, March 10, p. 341.

Mechanical Handling of Iron Ore.—Iron and Coal Trades Review, March 10, p. 344.

Re-equipment of a Machine Tool Works.—Engineer, March 10, p. 276.

Thrust Boring with Manual Operation.—Engineer, March 10, p. 280.

Machine Tool Trades' Association.—Engineer, March 10, p. 285.

Hydraulic Storage.—Electrical Review, March 10, p. 326.

Electricity.

The Electricity Supply Bill.—Electrical Review, March 10, p. 325.

High Power Mercury Arc-Rectifiers.—Electrical Review, March 10, p. 353.

Quick Make and Quick Break Gimlets.—Electrical Review, March 10, p. 353.

Iron and Steel.

Iron and Steel Production in 1921.—Colliery Guardian, March 10, p. 602.

"Fool Proof" Materials.—The Engineer, March 10, p. 273.

Transport.

Transport Charges on Coke and By-Products.—Colliery Guardian, March 10, p. 603.

Unification of Railway Gauges in Australia.—The Engineer, March 10, p. 280.

Economics.

Miners' Wages.—Colliery Guardian, March 10, p. 609.

Manufacture of Mining Cables.—Colliery Guardian, March 10, p. 599.

Chemical Industries.

Neutralisation of Sulphate.—Iron and Coal Trades Review, March 10, p. 347.

International Labour Conference.

From Mr. W. Gemmill, of the Chamber of Mines, who was representative of the South African Industrial Employers at the third International Labour Conference at Geneva last year, we have received a neatly printed and valuable report, dated February 27, 1922. Mr. Gemmill's report reviews the various activities of the Conference and concludes with a tribute to his colleagues, Major Doyle and Mr. A. C. van der Horst. As regards the South African Government Labour representatives, he states that "whenever circumstances permitted it the delegates endeavoured to act together as a unit in the interests of South Africa."

GENERAL MINING & FINANCE GROUP.

The following are the results of operations on the producing mines of the General Mining Group during the months of January, February and March:

Company.	Tons Crushed.	Total Cost.	Cost per Ton.	Total Revenue.	Profit.
Aurora West ...	8,409	£23,873	56·78	£10,856	*£13,017
Meyer & Charl.	14,522	35,657	49·11	41,910	†6,253
New Goch	18,700	35,082	37·52	19,797	*15,285
Rood. United ...	14,707	28,221	38·38	13,021	*15,200
Van Ryn Est. ..	24,058	55,410	46·06	36,119	*19,291
West Rand Con.	39,440	87,322	44·28	48,086	*39,236
	119,836	£265,565	44·32	£169,789	
Losses					£102,029
Less profit					6,253
Total loss					£95,776

* Loss. † Profit.

The figure of the total revenue has been arrived at by taking the gold produced during the quarter at 95s. 6d., 92s. 6d. and 94s. per fine oz., respectively, for the three months, less estimated realisation charges.

UNION CORPORATION GROUP.

Following are particulars of operations on the producing mines of this group for the quarter ended March 31:—

Company.	Stamps.	Tons Crushed.	Fine Ozs.	Revenue (Including Sundry Rev.) Total	Per ton s. d.
Geduld Proprietary	100	50,500	19,078	£91,849	36/4
Modder Deep	70	56,600	32,955	153,966	54/5
Totals and averages	170	107,100	52,033	£245,815	45/11

Company.	Costs (Including Strike Expenses) Total.	Per Ton. s. d.	Profit Total.	Per ton. s. d.
Geduld Proprietary...	£112,041	44/4	*£20,192	8/0
Modder Deep	101,092	35/9	†52,874	18/8
Totals and averages..	£213,133	39/10	£32,682	6/1

* Loss. † Profit.

The above results are arrived at by valuing gold, per fine ounce, for the three months, respectively, at: January 95s. 6d., February 92s. 6d., March 94s. Realisation charges in excess of normal are debited direct to revenue.

BIN AND HOPPER GATES

¶ Robins Gates are made in many types and sizes, most of which are standardised.

¶ Among these are: Single and double cut-off gates, rack-and-pinion gates, under-cut gates, radial finger gates.

¶ In designing, special thought is given to the characteristics of the material to be handled, and to convenience and ease of manipulation.

¶ Method of operation is carefully suited to the need, whether by hand-lever, crank, chain, air, or electricity.

¶ Structural steel or cast iron are used, depending on the requirements.

Robins Conveyors (S.A.), Ltd.

(Head Office: Robins Conveying Belt Co., New York, U.S.A.)

REID BROS.

(S.A.), LIMITED.

Sole Agents for:

CARRON COY.—HAULAGE GEARS, Etc.

ANDERSON, BOYES & COY.—ELECTRIC COAL CUTTERS.

HARDY PATENT PICK COY.—"HARDIAX" AIR COAL CUTTERS.

BLANTYRE ENGINEERING COY.—SCREENING PLANT.

WM. ARNOTT & CO.—CORNISH AND LANCASHIRE BOILERS.

QUASI-ARC ELECTRIC WELDING APPARATUS.

SMALL & PARKES—BELTING, PACKING, Etc.

FINNEY PATENT HAND PUMPS.

WELDLESS STEEL CHAINS.

CHAPMAN DOUBLE BALL BEARINGS.

JOHANNESBURG.

P.O. Box 802 'Phones 6070/1

AND AT DURBAN.

MILLAR DENNIS

ORIGINAL MAKERS OF

"BRADFORD INVERTED"

PLUG COCKS.

SOLE AGENTS:

GEO. CRADOCK

—AND CO. (S.A.), LTD.—

75-77, CULLINAN BUILDINGS.

P.O. Box 316. Telephone 539.

Tel. Add.: "ROPES."

JOHANNESBURG.

Approved by Mines Dept., Home Office and Board of Trade

THE "PROTO"

SELF-CONTAINED OXYGEN BREATHING APPARATUS

for Rescue and Recovery work in Mines after Explosions, etc.

ADOPTED BY ALL THE PRINCIPAL RESCUE STATIONS IN THE UNITED KINGDOM, AND BY MANY COLONIAL AND FOREIGN GOVERNMENTS.

SMOKE HELMETS

of various patterns.

For Gob Fires and other Short distance work in Collieries.

Simple. Light. Portable.

THE "NOVITA" OXYGEN RESUSCITATION APPARATUS FOR THE APPARENTLY ASPHYXIATED.

RESPIRATORS FOR ALL PURPOSES. OXYGEN COMPRESSION PUMPS. GAS ANALYSIS APPARATUS. ELECTRIC LAMPS, Etc.

SIEBE, GORMAN & CO., LTD. "NEPTUNE" WORKS and 187, WESTMINSTER BRIDGE ROAD, LONDON, S.E.1, ENGLAND.

Cables: "Siebe, London." Codes: A.1, A.B.C. 5th, Western Union, Bentley, Lieber, Marconi, Engineering and Private.

The South African Mining and Engineering Journal.

HEAD OFFICE: 176-180 Stock Exchange Buildings (2nd Floor), Fox Street, JOHANNESBURG, Union of South Africa.

Telephone **913.** P.O. Boxes **963** and **4573.**

Cables and Telegraphic Address: "MINING JOURNAL."

ANNUAL SUBSCRIPTION RATES: Oversea, £2; Union of South Africa and Rhodesia, £1 10s.; Local Delivery (Town only), £1 6s., payable in advance.

AGENTS FOR GREAT BRITAIN AND AMERICA: Argus South African Newspapers, Ltd., Byron House, 82-85, Fleet Street, London, E.C. 4.

Copies of this Journal are obtainable at all Branches and Agencies of the Central News Agency, Ltd., at all News Agents and Railway Bookstalls throughout South Africa, and at the London Agency as above.

CONTENTS. PAGE

The New State Areas Plant 1053
Parliament and the Mining Industry 1055
The V.F.P. and the Recent Industrial Crisis 1059
Government and the Coal Mining Industry 1063
A New Method of Treating Surface Residues for Gold 1065
Letters to the Editor 1066
The Mining Activities of the "T.C.L." 1067
Busy Man's Page 1069

Editorial:

The Industry Recuperating 1071
Finance and Information for Investors 1073

Engineering Section:

The Preservative Treatment of Rand Mine Timber 1075
World's Record Drilling Organisation 1077
Share Market 1079

Trade and Industries Section:

The Week in the Mining Material and Engineering Trades 1080

EDITORIAL.

THE INDUSTRY RECUPERATING.

The mines of the Rand are getting back to normal as rapidly as can be expected, and they have already been able to re-engage more European employees than it was generally anticipated they would be able to do, having regard to the short time that has elapsed since the strike was cried off and to the fact that the complement of natives is still short by 50,000.

The Labour position in the mining industry was clearly outlined in the House of Assembly on Tuesday by the Minister of Mines and Industries, who, in reply to a question by Major Hunt, stated that the number of Europeans re-employed on the Witwatersrand gold mines since the strike was declared off and up to March 31 was approximately 7,500. The number of Europeans who applied for work on the Witwatersrand gold mines during the same period without success was approximately 6,500; the number of natives who returned to work on these mines since the re-opening of recruiting and up to March 31 was 2,116. On March 31, 12,629 Europeans and 123,526 natives were employed on the Witwatersrand gold mines. Permission to re-open native recruiting was wired to all magistrates in native areas and protectorates on March 18, and the Governor of Mozambique received a similar advice from the Governor-General on March 27. Magistrates and protectorate administrations have been requested to make reassuring statements to natives in order to expedite their return to the mines.

Since the end of last month further numbers of men have been taken on, and at the moment of writing the position is that approximately 14,000 are employed. But the industry is still short of approximately 50,000 natives. The Chamber of Mines has undertaken to observe a ratio of 10·5 natives to one white man, and it is therefore obvious that for each one thousand and fifty boys who are secured jobs will be created for a further hundred Europeans. The first batch of East Coast boys recruited since the upheaval was due to reach the Rand yesterday.

What the Reef wants now is peace in which to recuperate and to regain its former industrial strength. It needs economic freedom, and particularly freedom from a surfeit of Parliamentary oppression. A lengthy article on the subject of the Government and the Mining Industry appears elsewhere in this issue, and we would direct particular attention to the views regarding the latest Government Commission which are contained in that article.

Notes & News.

Chamber and Employment.

The Transvaal Chamber of Mines has issued an official notice stating that all matters in connection with the engagement of men on the mines are entirely in the hands of the managements of the mines. It is a waste of time for applicants for work to apply at the offices of the Chamber of Mines. The Chamber has nothing whatever to do with the placing of men on the mines.

* * *

Geological Society.

Under the auspices of the Geological Society of South Africa, a lecture on "The Horizontal Movement of Continents" (Wegener's Hypothesis in its latest form), which will be illustrated by lantern slides, will be delivered by Dr. G. A. F. Molengraaff, hon. member of the Society, and a member of the Shaler Memorial Expedition, on Monday, April 10th, 1922, at 8.15 p.m., in the Main Hall, Scientific and Technical Club, 100 Fox Street, Johannesburg. Visitors are cordially invited to attend.

* * *

February Mineral Statistics.

The returns issued by the Mines Department for the month of February reflect the restricted sale of operations caused by the strike. The large gold mines of the Transvaal had in their employment 5,049 white men and 145,464 natives. The gold production of the Transvaal for February was 398,367 fine oz., valued at £326,132, the value being calculated at the standard rate for gold. The Transvaal Chamber of Mines estimates the value of the gold output for February at £4·625 per fine oz., which would represent an increase of £34,309 in the total value of the month's output. The total Union diamond output for the month was 45,775 carats, valued at £179,625. The coal output for the Union was 549,564 tons, valued at £220,519. The copper output for February was valued at £1,815, tin at £3,614, and other base metals £7,043. The total value of the month's output was £801,732, showing a big decrease on the January figures, due to the gold mining strike.

* * *

Geological Society of South Africa.

The twenty-sixth annual meeting of the Geological Society of South Africa was held at the Technical Club, Johannesburg, on Monday, April 3rd, 1922, at 8.15 p.m. Dr. Shand, the retiring President, presided, and delivered an address on "The Problem of the Alkaline Rocks." The address dealt with this one group of igneous rocks which is characterised by the presence of soda and potash in excess of the usual proportions. Various theories of the origin of the group were discussed, and it was shown that the hypothesis of Professor R. A. Daly—that many alkaline rocks are formed by the reaction of other kinds of igneous magmas with limestone—is strongly supported by the South African evidence. The economic interest of these rocks was also mentioned, and occurrences of rare earth metals, iron ores, and soda were described. Attention was drawn to H. S. Washington's opinion that the lencite-bearing lavas of Italy may become important as a new source of potash compounds. Mr. C. J. Gray was elected President of the Society for the ensuing year. Messrs. A. L. du Toit, W. J. Gau, and S. J. Shand were elected Vice-Presidents, and Dr. R. B. Young was re-elected Hon. Secretary and Treasurer. The following gentlemen were elected to the Council: Messrs. A. L. du Toit, A. L. Hall, H. S. Harger, S. H. Haughton, J. G. Lawn, H. B. Maufe, H. S. Meyer, E. T. Mellor, P. M. Newhall, A. W. Rogers, D. Wilkinson and R. B. Young. The retiring Auditors, Messrs. Chas. Stewart and F. E. Roberts, were re-appointed. The proceedings then terminated.

* * *

Pretoria Silver Lead Company.

A report upon operations of the Pretoria Silver Lead Company, Ltd., for the quarter ending 31st March has just been issued. This states that mining operations were transferred to No. 2 shaft from No. 1 at the beginning of this quarter. No. 2 shaft was sunk to a depth of 60 ft. and was then temporarily suspended during the erection of the headgear and hoisting engine. Sinking was then resumed until, at a depth of 115 ft., a chamber was cut and No. 1 level station established from where the crosscut was commenced to the lode. At the end of March the crosscut was advanced 7 ft. and the shaft was deepened to 125 ft. The water zone was passed through at 90 feet and a water ring built from which all the pumping is being done. The water difficulty was thus overcome, but in view of the fact that at one time 12,000 gallons of water per hour had to be pumped, while sinking, great praise is due to all concerned for their efforts. The distance from No. 1 level station to the lode is horizontally about 40 feet. No. 1 east winze has been sunk to a depth of 30 ft. in rich lode. This winze will be connected with No. 1 level at the earliest opportunity. Machinery and plant: The main hoist has been erected at No. 2 shaft and steam and air mains are connected between No. 2 shaft and the plant at No. 1. The air compressor plant has all been connected up and the drills are now in operation in the mine and working satisfactorily. There was a short stoppage of work owing to the strike and the work was naturally more or less effected during the continuance of the strike and revolution, but not to a serious extent. The company has been approached from various quarters by persons desirous of purchasing the silver lead ore, but definite arrangements in this connection have been deferred until the lode is cut through, which should take place in a few days now. The options on shares the due date of expiry of which was the 21st March are extended until the 21st June next.

* * *

S.A. Gold Trust.

Fortunately for the S.A. Gold Trust it has a substantial reserve fund, and this has been drawn upon to the extent of £40,000, leaving it at £50,000, and this has allowed of the payment of the preference interest and 1s. dividend on the ordinary, leaving £4,128 to be carried forward. The New Gold Trust, of which the parent company holds the entire capital, made a net profit of £48,309, but as £48,355 had to be provided for depreciation, "which the directors consider to be permanent on certain holdings," there was naturally no dividend forthcoming for the Gold Trust. From the balance sheet it will be seen that British Government securities, loans at short call, and cash are practically the same as a year ago. The period has evidently not been propitious for profitable operations. A glance at the list of holdings of the new company shows some alterations. The 14,583 Knights Deep shares have disappeared, but the company's interest in Mexican Eagles has been increased by 1,125 shares, to 3,375, and a big interest has been acquired in New North-West Corporation. The Rouxville Diamond and Victoria Falls preference holdings have been disposed of.

* * *

Australian Steel Works Close Down.

It is significant that the Broken Hill steel works in Australia are about to close down for the simple reason that the products cannot now compete with the imported article. The official explanation, issued by the company, has the following, inter alia:—"A considerable proportion of the company's output is in merchant bars which the company is unable to manufacture at the price at which it is selling, and even at that price is unable to obtain orders. Consequently, in the absence of sufficient orders, it is impossible to keep the works going—apparently no substantial orders will be received until cost of manufacture can be reduced to permit the company to sell at prices which will enable Australian consumers of steel to place their orders with the company. To illustrate the point, it may be mentioned that the company's present price of merchant bars at the iron and steel works is £16 10s. per ton, whereas the same steel can be landed duty paid in Australia from Great Britain at £14 14s. per ton into the various ports of the Commonwealth. As previously expressed by the directors, they greatly regret that such a position has arisen, having regard to the large number of men put out of employment, but the situation is inevitable."

Metal Market Quotations—Monday, April 3.

Standard copper, £57 2s. 6d. cash, £51 17s. 6d. forward; electrolytic copper, £62 10s. cash, £64 10s. forward; standard tin, £143 10s. cash, £145 forward; foreign lead, £21 15s. cash, £21 17s. 6d. forward; quicksilver, £10 17s. 5d.; bar silver, 33¾d.; bar gold, 95s. per oz.

SPECIAL EXPLOSIVES AND CHEMICAL TRADES NUMBER TO BE ISSUED AS A SUPPLEMENT NEXT WEEK.

The next issue of the "South African Mining and Engineering Journal" will contain a special illustrated supplement dealing with the explosives and chemical works of the Union. In this will be found interesting details as to the methods of manufacture, outputs, plant capacities and types of products, etc., of the various factories. Special attention has been given in this supplement to the manufacture of fertilisers and other agricultural chemicals, such as dips and sprays, and as the number will be on sale during the Witwatersrand Agricultural Show week, it should make a special appeal to farmers, who will during the next few days be gathered together in Johannesburg from all parts of the Union. The supplement represents the first serious attempt ever made to get together within the covers of one publication a complete and detailed account of the various factories which manufacture and sell products under the broad head of explosives and chemicals. The supplement not only will contain informative articles specially written for the number by commissioners of the Journal who have visited the factories in question, but will also give useful statistics as to production, a brief history of the explosives trade in this country, and an article by an agricultural expert on the increasing recognition of scientific farming and the proper uses of fertilisers and farming disinfectants. The number will be on sale on Saturday next and the price will as usual be 6d. Large numbers of additional copies of this special issue of the Journal are being published, but those who are not regular subscribers to the paper are advised to secure copies early, inasmuch as a considerable portion of the issue already has been ear-marked for special distribution.

Finance and Information for Investors.

AN EXAMINATION OF BALANCE SHEETS AND REPORTS—DATA FOR SHAREHOLDERS.

In response to the request of numerous readers we have commenced a new feature of the journal. In these pages we shall endeavour to compress reviews and criticisms of balance sheets, to examine Government, Municipal and other loans, to note dividend declarations, to analyse new prospectuses, and to examine the financial results and prospects of mining, commercial and banking companies concerned with trade, industry and finance in the Union and Rhodesia.

Union Corporation.

The accounts of the Union Corporation, Ltd., for the year ended 31st December, 1921, show a realised net profit of £179,517, and including £68,355 brought forward from 1920, there is an amount of £247,872 to be dealt with. The directors have decided to add £30,000 to the reserve account and have declared a dividend of 16 per cent. (2s. per share), involving an amount of £140,000, and leaving the sum of £77,872 to be carried forward.

* * *

South African Trade with America.

Despite the fact that February was a short month, the volume of trade between South Africa and the United States reached the highest point for many months, according to cable advice to the American Trade Commissioner, Mr. P. J. Stevenson, from the Department of Commerce at Washington. From the standpoint of South Africa, the steady increase in American imports of local raw materials is most encouraging, the February total being $500,000, compared with $162,000 in October, since when the upward tendency has been apparent every month. This tendency is also in accord with the general trend of American imports as a whole, which are reported to be on the increase. Exports from the United States in February were almost double the January total, being $1,700,000, as compared with $900,000. It is believed that January marked the turning point in the readjustment of economic conditions in the United States, and there is a widespread and general view that the present year will be more satisfactory than 1921. As a result of large railway equipment orders the iron and steel industry has been rejuvenated, while general domestic buying is also on the increase. The security markets are active, which is another indication of better conditions. While liquidations have been extremely heavy, this movement has probably been discounted. The national coal mines strike, with which is coupled a railway strike, will be of far-reaching importance. It is believed that a more favourable adjustment of wages must result, which will mean that the greatest single obstruction to general prosperity will have been removed.

* * *

The Gold Stock.

Many people seem to consider that gold may command a temporarily increased premium during the present year. The *Statist* throws some light on the matter in the following passage: "Were we to get back to a gold basis the guarding of our stocks of the metal would be a matter of difficulty. Despite the fact that oscillations in the London-New York rate would be much less severe with a gold standard effective in both countries, minor variations in the rate might, with free export allowed, cause heavy shipments of metal, and not only would it be difficult to recover our stocks once lost, but, if the revival of present restrictions on the movements of the metal were found necessary, the failure of our effort at restoration of the standard could only bring discredit on us. The difficulties of our position are increased by the fact that the United States Government is a creditor to whom we owe, roughly, £1,000,000,000, on which some payments will certainly be made before the end of the current year. This is apart altogether from our trade indebtedness. Our exports and re-exports to the United States in 1921 amounted to £64,553,425, and our imports to £275,189,245, leaving a visible adverse balance for that year alone of £210,635,820. All our debts to America are gold debts, but as our debtors cannot pay us in gold we cannot pay off the United States by our claims on other countries. The deficiency on trading, etc., account on our part would thus have to be met by shipments of the metal across the Atlantic."

* * *

Reserve Bank Accounts.

The following is the weekly statement of the South African Reserve Bank for week ended April 1, 1922: Liabilities: Capital, £1,000,000. Deposits, bankers, £6,617,697 13s. Other liabilities, £58,943 2s. 9d. Total, £7,676,640 15s. 9d. Assets: Gold, coin and bullion, £91,500. Gold certificates, £5,075,031. Subsidiary coin, £12 17s. 9d. Loans and advances to the Government, £2,200,000. Investments, £300,000. Other assets, £10,096 18s. Total, £7,676,640 15s. 9d. Ratio of cash reserve to liabilities to public, 78 per cent.

* * *

"Mines and Prizes, Ltd."

The success of the venture known as "Aids and Benefits, Ltd.," has attracted imitators, and the latest scheme of this sort is named "Mines and Prizes, Ltd." It is promoted by Mr. Bleloch, who is using the idea to finance the Southern Van Ryn property. It may be remembered that the latter property was closed down through lack of capital, the heavy claim licences gradually eating up the funds supplied for working capital. If a mine like the Modder West can legally raise capital by means of the "Aids and Benefits" scheme, Mr. Bleloch believes that the Southern Van Ryn should be even more successful by offering similar attractions. A bitter critic of the mining industry once described it as a "side-show to the Stock Exchange." If schemes of the "Aids and Benefits" type become more common we may yet have mining dubbed a side-show to the racecourse, and with more truth. The moral of the success of all these schemes is, of course, that the community loves a gamble and that the Government is neglecting a good source of revenue in ignoring the fact.

* * *

Sir H. Strakosch's Views.

When Sir Henry Strakosch paid a visit to the Rand recently the state of his health made it difficult for us to interview him on his pet currency questions. Most of his stay on the Rand, indeed, was spent in a nursing home, but he utilised the time in writing a brief pamphlet on the present currency position in this country. All that has happened since he secured the passage by the Government of the Reserve Bank Act has served to confirm Sir Henry in his views on the best course for this country to pursue. He reiterates the views expressed by him before the Select Committee on the Banking and Currency Bill; and he strongly advises against the withdrawal of the embargo on gold in 1923. Having modelled their currency programme and policy so largely, if not entirely, on Sir Henry Strakosch's advice up to the present, the Government to be consistent can hardly fail to continue to act upon his advice.

A Progressive Insurance Company.

The African Life Assurance Society has had another successful year, and is able to report a healthy increase in force at the end of last year. The Society was first established in Johannesburg through the enterprise of Mr. I. Schlesinger, and it has grown steadily through all the ups and downs of the past twelve years. It is the principal and parent of what may now be called the Schlesinger group of companies, all of which seem to be doing remarkably well. Not only insurance in all its branches, but banking, real estate settlement schemes, theatres and film production are included in the activities of the group, and all give evidence of skilled technical management coupled with careful financial control.

* * *

A New Union Loan.

A new Union Loan of £15,000,000 is freely spoken of as in contemplation. Since the successful issue of the Red Revolt the credit of the Union is said to have improved in the London money market, and it is thought a substantial loan, provided it were for reproductive works, would be well received. At any rate, the country stands greatly to benefit from such a loan.

* * *

Reserve Bank's First Dividend.

The Reserve Bank has declared its first dividend of 6 per cent. The bank has apparently no difficulty in employing its funds, the Union Government obliging it by borrowing upwards of two millions for current needs. The shares of the Reserve Bank have now all been taken up by the banks and the public, and they are regarded as a gilt-edged investment. The maximum dividend is 10 per cent.—quite such a return—which is not at all unlikely in the future—is obviously very attractive when taken in conjunction with the security offered.

* * *

Some New Issues.

The Union Castle recent issue of £900,000 debentures to finance additions to its fleet is reported to have been fully subscribed in London. The Municipality of Salisbury, Southern Rhodesia, is inviting applications for an issue of £70,000 at par bearing interest at 7 per cent., repayable in 1932. A novel feature of the issue is the fact that, in order to bring this loan within the reach of the small investor, the Municipal Council has decided to issue stock certificates for ten pounds sterling or any multiple thereof, the terms of payment being not less than 10 per cent. on application and the balance not later than June 30, 1922, deposits and instalments to be multiples of one pound sterling. Interest at 7 per cent. will be paid as and from the date upon which each instalment of capital is received by the Council.

Barberton is also issuing a modest loan of £17,000 at 7 per cent. to pay for municipal improvements. Several other South African municipalities are said to be contemplating similar appeals to the local investing public.

* * *

A Capetown Merchant Merger.

These two well-known Capetown firms, Cartwrights and Fletchers, have decided to merge their businesses, and appeal to the public for fresh capital. Both concerns are well and favourably known in the southern half-capital, and the issue should be left to the cautious investors of that centre.

* * *

The Strike and Market Prices.

The Rand strike and revolution naturally bulked large in the financial press in mail week. One London contemporary pertinently points out, writing on March 14, that "since the start of the gold miners' strike, over two months ago—on 10th January to be exact—the Kafir market and authorities on this side have never wavered in their belief that the outcome of the struggle would prove to the eventual benefit of the industry of the world's greatest goldfield. It is true that the suspension of production will have caused temporary loss of gold production to the tune of £6,000,000 or £7,000,000 and loss of profits to the amount of well over £1,000,000. But the gold is still in the mines and the vastly improved working conditions expected to develop when the Rand situation has finally settled down will, it is believed, rapidly compensate for the present set-back. So little are mines and plants affected by suspension that at the end of the Boer War of 1899-1902 there was actually a boom in Kafirs. It will be seen from the following table of representative share quotations that allowing for a modest relapse prices are now as good—and in some cases better—than they were when the strike broke out:—

Share.	9th January.	10th March.	13th March.
Anglo-Americans ...	£0 15 7½	£1 1 10½	£1 1 3
Brakpans ...	2 6 3	2 3 9xd	2 2 6xd
Central Minings (£8) ...	5 13 9	5 17 6	5 15 0
Gedulds ...	2 4 4½	2 3 1½xd	2 12 6xd
Johnnies ...	1 1 0	1 2 6	1 2 3
Modders (10s.) ...	3 13 9	3 13 9xd	3 7 6xd
Nourse ...	0 7 6	0 10 3xd	0 9 9xd
Rand Mines (5s.) ...	2 0 0	2 10 0xd	2 0 0xd
Randfontein Estates ...	0 15 0	0 16 0	0 15 9

Those shares marked 'xd' in the above table have had their half-year dividends deducted from prices since the strike broke out. In fact, the Rand has distributed about £4,000,000 of dividends in respect of 1921 profits during the period the labour crisis has been at its height—eloquent testimony to the underlying soundness of the industry."

Administrator's (Transvaal) Relief Fund.

We beg to acknowledge subscription to this fund forwarded through the offices of this paper as under:—J. W. Fraser, Standard Bank S.A., Ltd., Capetown, £2.

Certificates issued by the Mines Department for the month ending 31st March, 1922:—Mine Overseers (Collieries): R. Rees. Mine Surveyors: C. J. Gates, A. Lichtenstein, H. G. McKerrow, H. K. Sherry. Mechanical Engineers (Mines): G. L. Vincent; (Works only): F. Brown, J. J. F. Dolan, A. Edge, H. J. Kelly, W. R. Owens. Electrical Engineers (Mines): H. W. C. Grittens, W. J. Petersen.

NOW READY.

THE S.A. MINING YEAR BOOK

1921—22.

By S. R. POTTER.

The Standard Reference Work on South African Mines.

Price 21/- net. Post free 22/6. 250pp. In Cr. Folio, Cloth, Gilt Lettered.

Obtainable from the Office of this Paper, or from Argus (S.A.) Newspapers, Ltd.,
[illegible], Fleet Street, London, E.C. 4.

A Recognised Indispensable Work of Reference.

For Mining Investors, Mining Engineers, Mine Managers, Bankers, Stockbrokers, Solicitors or anyone interested in the Mining Industry.

A RECORD OF INFORMATION concerning Mining Companies operating in all parts of South Africa, Gold, Diamond, Copper, Tin and other Mines, Collieries, Exploration, and Mining Investment Companies.

Data Twelve Months ahead of those in other Works of Reference.

ENGINEERING SECTION.

The Preservative Treatment of Rand Mine Timber.

(By L. D. Hingle).

When this problem was originally investigated by the writer, the feasibility of treating mine timber locally appeared to depend on the possibility of making use of the zinc sulphate residue from the treatment plants on the Rand. Creosote could not, and still cannot, be taken into consideration owing to its high cost, and quite apart from this important factor, the objection of inflammability would in many cases be a fatal one where mine timber is concerned. Zinc chloride had given satisfactory results in many countries, but there was no information available as to the toxicity of the sulphate to the wood-destroying fungi. It appeared possible that the sulphate had not been used on a practical scale owing to the chloride being the salt more commonly available, and it was considered desirable to erect a small experimental plant for the purpose of investigating the toxicity of the waste zinc sulphate liquor to the wood-destroying fungi. Experiments were accordingly carried out on the mines of two companies belonging to the Central Mining-Rand Mines Group, namely, the Rose Deep, Limited, and the Consolidated Main Reef Mines and Estate, Limited. It was decided that the most convenient method of treatment to attempt in the first place would be the non-pressure or open-tank process. A pressure system would require an expensive plant which could operate economically only on a large scale, and after the value of the zinc sulphate as a preservative had been proved. The tests were commenced on the Rose Deep in the early part of 1919 and on the Consolidated Main Reef a few months later. In the nature of the case it was obvious that some considerable time had to elapse before definite results could be observed, but an opinion can now be formed as to the protection afforded the timber by the application of the zinc sulphate.

Timber for the Rand Mines.

Rose Deep Experiment.

At this mine the timber was treated in a vat 16 feet long by 4 feet wide and 4 feet deep, a solution containing about 9 per cent. zinc sulphate being employed. Seasoned 4 inch lagging poles and 8 inch diameter props were chosen for the experiment, a proportion being set aside untreated to be sent underground as test pieces simultaneously with the treated. The preliminary hot bath was provided by the application of steam, after which the solution was allowed to cool, the total time of treatment being 36 hours. The timbers were then removed from the vat and allowed to dry, after which they were placed in certain localities in the mine during June, 1919, side by side with the untreated test pieces. The localities chosen for placing the timber were various points along the 2nd Level, No. 4 Shaft, where untreated timber was known to rot quickly, and on the Engine Plane where similar conditions existed. The timber concerned in this experiment was examined during September, 1921, when it was found that on the 2nd Level the treated members were still hard and good and in a splendid state of preservation; on the other hand, the untreated timber which had been subjected to the same atmospheric conditions for the same length of time crumpled away on being tested with a pick, and had obviously been of no practical use for some considerable period. Similarly, on the Engine Plane, all 8 inch props and 4 inch lagging which had been subjected to treatment were found to be in a good state of preservation, while untreated lagging which had been placed in the same vicinity as much as a year later than that treated, was found to be in a very poor condition.

Consolidated Main Reef Experiments.

On this mine the solution employed was a mixture containing 2½ per cent. zinc sulphate and 2½ per cent. sodium chloride. A number of peeled and seasoned 8 feet by 4 inch lagging poles of uniform quality was selected, one half being taken to the shop yard to be treated, the remainder being set aside untreated to be placed underground with the treated. The treatment was carried out in two old boiler shells approximately 16 feet long and 3 feet in diameter, some of the top plates being cut out to facilitate the handling of the timber, while the boiler shell required for the hot treatment was equipped with a steam coil. The timber was given an initial treatment lasting seven hours with the solution kept at boiling point, after which the poles were transferred to the cold solution and left there for 12 hours. The treated poles, after drying off, were sent underground and built into pigstyes on various levels, a lead tag being affixed to each pigsty showing the [illegible] in which it was built. Alongside each of these pigstyes, composed of treated timber was built a pigsty of the untreated timber, and a record was kept of the various places in which they were installed on the different levels. The first of these sets of pigstyes was built in January, 1920 and the last in August, 1920. Until the middle of 1921 there was no appreciable difference between the treated and untreated timber, but a few months later the difference had become most marked. The untreated timber was obviously rotting rapidly, while in every case the treated was in a much better condition. When inspected during September, 1921, the appearance of the pigstyes built of untreated timber indicated that within a few months they would have rotted completely and fallen out, if not previously removed. To summarise the above results, in every case the treated timber was found to be in a markedly better state of preservation than the untreated, after having been exposed to identical conditions of temperature, humidity, etc., in the mine workings, over an extended period. In the case of the Rose Deep, the untreated timber had a useful life of at most 18 months, whereas the treated timber was found to be in a perfect state of preservation at the end of 2½ years. In the case of the Consolidated Main Reef, the untreated timber at a recent inspection was likewise found to be in a very poor condition, in marked contrast to that of the treated timber. The duration of treatment was longer on the Rose Deep than on the Consolidated Main Reef, and it is probable that a deeper penetration was obtained in the former case. In the light of the Rose Deep results the addition of sodium chloride is obviously unnecessary and should not be adopted. It may be advisable at this juncture to again emphasise the necessity of peeling and thoroughly seasoning all timber before the preservative is applied. In any event, apart from any question of treating with preservatives, the practice of allowing unseasoned or unbarked timber to be sent into a mine is a very bad one and should never be countenanced.

Advantages.

Some of the advantages to be gained by treating timber locally with a zinc sulphate solution may be enumerated hereunder:—(1) The zinc sulphate liquor is at present allowed to run to waste and, therefore, is of very little value to the mines. The cheapness of this preservative, as compared with any other such as creosote, is obvious and need not be elaborated; (2) The application of zinc sulphate has a distinctly protective effect against fire, as proved by inflammability tests recently carried out in the Metallurgical Laboratory of the Rand Mines, Limited. The Chief Chemist, Mr. F. W. Watson, reports:—"Pieces of untreated and treated gum and wattle of equal sizes were placed over similar Bunsen Burners, and allowed to stand in contact with the full flame for the same interval of time. The untreated burned comparatively easily, giving a flame which continued after the removal of the burner, and the wood continued to glow for some time. The treated samples burned only when the Bunsen flame was in contact and gave no flame when the burner was removed. The point of contact of the flame with the wood did not glow freely but showed a yellow zinc oxide coating. The faint glow disappeared immediately on removal of the burner. This shows that the treatment has a distinct protecting effect against fire." In view of recent experiences with fires on these fields, it is obvious that this factor is a most important one; (3) the plant required for treatment could be produced on any mine at a very low cost; (4) the treatment is very simple and calls for a minimum of labour; (5) it is possible that the use of this preservative will permit of cheap indigenous timber being used for certain classes of work in preference to the much more costly imported woods.

Saving to be Effected.

It is realised that in many cases sound mine timber ruptures on being subjected to overwhelming stresses, but on the other hand there is no doubt that most mines spend a considerable amount of money on the purchasing and installing of sound timber to take the place of timber which has been rendered useless by rot brought about chiefly by the action of fungi. In the case of the Consolidated Main Reef, the drives are kept open by means of a double row of 8 feet pigstyes along their north or upper sides, and where possible 30 feet deep long wall packs with pigstyes at the corners, on the lower side of the drives. In addition a fairly large number of big props is required. The pigstyes and props on the upper sides of the drives have usually to be replaced at least once, and in many cases twice, or even more, according to the length of drive and the availability of the areas to be mined. It would be safe to assume that these supports have to be renewed twice on an average during the life of the drive, the renewals of the pigstyes being only due to the decay of the timber. Detailed investigation shows that the cost of the labour necessary to replace these supports is approximately three times that of the timber. The cost of drive timbering in this mine, which produces about 50,000 tons of ore per month, is estimated at £1,160 per month, and of this amount approximately two-thirds, or over £9,200 per annum (equivalent to nearly 4d. per ton milled) refers to renewals which could be practically eliminated by the adoption of the zinc sulphate process. Furthermore, this figure refers to renewals along the upper sides of the drives only, and does not include any allowance for other localities such as shafts, the rotting of timber in which is a cause of considerable expense in many mines. Apart from the saving to be effected in the first cost of timber used in this replacement work, the labour might be diverted to productive work or development, with ultimate beneficial effect on profits. The partial replacement of expensive imported woods by treated local timbers would obviously result in very considerable economies being effected. The timber consumed by mines in the Transvaal during the year 1920 was valued at £1,155,000. It is obvious, therefore, that even if only a small percentage of this were required to replace decayed timber, when it is considered that the labour involved cost, say, three times as much as the timber, a considerable saving could be effected by the introduction of the zinc sulphate process. In view of the large and ever-increasing quantity of timber required by the mines and other consumers, the possibility of a timber shortage in the future should not be overlooked; any factor which might assist in this direction is worthy of consideration. A further point might be made that by giving all our mine timber a longer useful life, we shall have the hanging wall throughout a mine, as a whole, more efficiently supported, with obvious beneficial results. In this connection, some reduction in the number of accidents caused by falls of ground might be effected.

In the experiments outlined above the varieties of timber employed were mainly wattle and gum, and with these woods a satisfactory penetration can be obtained without the application of pressure. An injection of one half-pound of zinc sulphate per cubic foot of timber was aimed at, but further experiments are now being carried out with the object of determining the minimum quantity of the salt necessary to afford the protection required. The treatment of the denser woods is also being investigated, while an experiment will be made shortly to ascertain the durability of wood treated with this preservative when used in localities troubled by boring ants. During the course of these investigations and in compiling the above notes the knowledge of those who have been engaged in this study for many years has been freely drawn upon. The writer would particularly acknowledge assistance from the works of Schlich and Charpentier, from Mr. Kynoch, of the Canadian Forestry Department, from various publications of the Government of the United States, and many others. Special thanks are due to the Managers of the Consolidated Main Reef and Rose Deep Mines, and to their officials who ably assisted in the carrying out of the experiments. I would particularly mention Mr. M. J. Thorp, the assistant manager of the Consolidated Main Reef, and his underground manager, Mr. Reid, for their valuable work in all matters pertaining to this investigation, and, in conclusion, acknowledge the courtesy of the Managers of the Central Mining and Investment Corporation, Limited, in granting permission to present this short paper.

Abstract from paper read before S.A.S. of E.

World's Record Drilling Organisation.

UNION IRRIGATION DEPARTMENT'S EQUIPMENT—PROMISING NEW INDUSTRY.

The total number of drills now in the possession of the Union Irrigation Department is 116, which is believed to be the largest organisation of its kind, either private or State-controlled, in the world.

So states Mr. A. D. Lewis (Director of Irrigation) in his report for the twelve months ended March 31st, 1921. The number of drills having been found inadequate to deal with the increasing demand for boring by farmers and for the rapid development of small holdings for the settlement of returned soldiers and others, 24 new drills were purchased during the year. Of these machines, ten steam-driven percussion drills ("23 Star," 1,000 feet capacity) and two petrol-driven drills ("36 Star," 600 feet capacity) were imported from America, while six oil-driven rotary shot drills were manufactured by a Transvaal engineering firm. The balance of six machines of the steam-driven percussion type (1,000 feet capacity) were built, with the exception of the boilers, in the departmental workshops at Pretoria. The manufacture of this machinery is a new departure in the activities of the Boring Branch, and the resulting economy and superior workmanship of the drills has justified the experiment. A new industry, providing employment for a considerable number of skilled artisans, has been established, and it is hoped that in future all drilling machinery required for Government purposes will be turned out in the departmental shops. The equipment of the Boring Branch was further added to by the taking over of six diamond drills hitherto controlled by the Mines Department.

Not a Commercial Proposition.

Since the establishment of the Boring Branch in 1904, 7,288 boreholes have been drilled with the departmental boring machines; the majority of these have been sunk in the Transvaal. During the year the demand for the services of the departmental water boring machines was well maintained, a total of 972 applications having been received. Sixty-seven drills were in active operation, this being eight in excess of the previous year, and the greatest number in commission since the establishment of the Boring Branch in 1904. An outstanding feature in connection with these boring operations is the serious increase in working costs.

Pause in New Construction.

Four general features of the year have had a considerable effect on the work of the Department:—(a) The market value of farm produce experienced a sudden fall from the high prices previously obtaining; (b) the effect on the irrigation farmer in some parts was aggravated by the absence of good floods; (c) the price of materials for construction and of labour generally reached the highest peak; (d) money for construction purposes has not been obtainable cheaply. As a consequence of (a) and (b) difficulty has been experienced in getting in repayments of loan moneys from farmers. As a consequence of (c) and (d) works which had already been sanctioned have been held back and only one new major loan was approved of by Parliament.

A Serious Position.

The repayment of loan moneys amounted to £56,000 out of £78,000 due, £22,575 being the sum in arrear. Several large loans will become due for repayment in the coming year, and there is reason to believe that the sum in arrear will increase. Of the £22,575, over £18,000 is in arrear in respect of irrigation boards, who are the chief defaulters. The Act provides that Boards should sue defaulters, but some Boards do not carry out their duties in this respect. The Act further provides that should the Board not carry out its functions, the Minister of Finance can step in and collect moneys due, but there is at present no staff or organisation provided for this purpose, and the whole object of the Irrigation Board system is defeated if Government has to take control. If the Government has to take control of schemes when they have got into a mess, it would be more satisfactory if the schemes were run by the Government from the outset and handed over when properly started. The present period of depression is not a suitable time for drastic action, but unless action is taken soon, serious consequences will follow. The irrigation rates are a first claim in cases of insolvency, and if they are allowed to mount up before pressing for payment, bondholders are likely to suffer, and in future investors will fight shy of all irrigation districts. The chief cause of failure is undoubtedly the holding of large areas of rateable land by individuals who are not capable of developing the whole, and in future loans it is highly desirable that some steps should be taken in co-operation with the Lands Department to split up the large areas before a loan is granted and to place a sufficiency of suitable cultivators on the land under conditions which will ensure the possibility of payment of rates. It is also necessary that the period of two free years after completion of the works should be extended, as it is too short to enable a farmer who has put his whole capital into development to derive full benefit; but this concession should be granted only to individuals who have shown sufficient development. If the rates are made approximately one-third in the third year, two-thirds in the fourth year, and full in the fifth year, there would be a more reasonable hope of getting in repayments in full.

Construction Programme Wanted.

It would tend to greater economy and efficiency in the Department if some general programme of future development could be indicated and especially if funds could be assured a year in advance.

Eighty-nine diamond diggers in the Pretoria district divided between them diamonds to the value of £1,539 in February; 1,004 diggers in the South-West Transvaal registered finds valued at £51,557.

GOVERNMENT EXAMINATIONS.
METAL. RESULTS, 1921. COAL.
Total METAL MANAGERS Certificates
Granted in S.A., 1921 36
Secured by Students of Messrs. LUCAS & WOLFE .. 21
Balance for S.A. 15
7 COAL MANAGERS Certificates obtained in 1921.
Total OVERSEERS Certificates (Metal and Coal)
Granted in S.A., 1921 61
Secured by Students of Messrs. LUCAS & WOLFE .. 25
Balance for S.A. 36
Total SURVEY Certificates
Granted in S.A., 1921 11
Secured by Students of Messrs. LUCAS & WOLFE .. 9
Balance for S.A. 2
C. D. LUCAS & B. E. WOLFE,
MINING ENGINEERS
OFFICES & LECTURE ROOMS: PERMANENT BUILDINGS.
Postal Address Box 6301 JOHANNESBURG

SABEN

"SaBeN"

SHEFFIELD

STEELS

FOR ALL MINING AND GENERAL
ENGINEERING PURPOSES

MINING STEEL, HOLLOW DRILL STEEL, FORGED SHOES AND DIES, CRUCIBLE STEEL, HEADS, CAMS AND TAPPETS, AIR-HARDENING STEEL, HIGH-SPEED TWIST DRILLS, SHAFTING, MILD STEEL BARS, Etc.

LARGE STOCKS ALWAYS ON HAND

Sole Agents for South Africa.

BARTLE & CO.,
LIMITED.
Loveday House. Box 2466. Phone 3553. Wires: "Faggot."
JOHANNESBURG.
And at KIMBERLEY and DURBAN.

RHODESIAN TEAK & MAHOGANY

FOR MINING & BUILDING PURPOSES,
ANT, ROT AND DAMP RESISTING.

Sleepers, Guide Blocks, Deals, Scantlings, Flooring (Machined for Secret Nailing) and all kinds of Purpose-Made Joinery, Fencing Posts, Etc.

PRICES MODERATE.

RHODESIA NATIVE TIMBER CONCESSIONS,
35, PERMANENT BUILDINGS, HARRISON STREET,
JOHANNESBURG.
Box 5530—Phone 3568—Yard: Eloff St. Extension

USE

"PORPOISE"

BRAND

ANTIFRICTION GREASE

Used for years by the majority of Mines all over South Africa.

Manufactured by

South African Lubricants & Chemical Works, Ltd.,
DURBAN & JOHANNESBURG.
Phone 1618, *Johannesburg Branch Office.*

STANDARD BANK
OF SOUTH AFRICA,
LIMITED.
(With which is incorporated the African Banking Corporation, Ltd.)

Established 1862.

Authorised Capital - - -	**£10,000,000**
Subscribed Capital - - - -	**£8,916,660**
Paid-up Capital - - - - -	**£2,229,165**
Reserve Fund - - - - -	**£2,893,335**

GENERAL BANKING BUSINESS transacted at all Branches and Agencies; DEPOSIT and CURRENT ACCOUNTS opened; PURCHASE and SALE of INVESTMENT SECURITIES effected, etc.

SAVINGS BANK ACCOUNTS opened on terms, particulars of which may be obtained on application.

The BANK is in close touch with TRADE and INDUSTRIAL CONDITIONS, both local and overseas, and special attention is given to COMMERCIAL ENQUIRIES from customers.

EXECUTOR and TRUSTEE business undertaken.

Over 380 Branches and Agencies in Africa.

Agents and Correspondents throughout the World.

The Week in the Sharemarket.

IMPROVING TENDENCY—LONDON OPTIMISTIC—RISE IN MODDER B.

The market, though quiet, has shown every indication of improvement, and with any encouragement from London there is little doubt that we should see considerably more activity. Advices from London by last mail voice a more hopeful view of the Kaffir market, and not without reason in view of figures quoted by some of the prominent financial papers. As mining conditions become more settled and the effect of lower working costs becomes felt there is no reason why investors should not be attracted by our shares. The rise in Modder B. is evidently due to the issue of their satisfactory annual report. We are of opinion that this stock has been unduly depressed for some time past.

	Fri. 31st	Sat. 1st	Mon. 3rd	Tues. 4th	Wed 5th	Thurs. 6th
Anglo-Amer. Corp.	19 6*	19 9	19 9*	19 10*	20 6	20 6*
Apex Mines	6 0*	6 0*	6 0*	6 0*	6 3*	6 3*
Aurora Wests	—	—				2 3*
Bantjes Cons. ...	6 4*	6 6*	6 4*	6 4*	6 4*	6 4*
Brakpan Mines	45 9*	46 0*	46 0*	45 0*	—	46 0*
Breyten Collieries ...	—	3 0*		-		
British South Africa	—	—	-			12 6†
Bushveld Tins	0 9†	0 8†	0 8†	0 5*	—	
Cinderella Cons.	2 3*	2 6	2 3*	-	2 3*	2 3*
City and Suburban	-	2 2*	2 2*	2 2*	—	2 2*
City Deeps	40 0*	40 9*	41 3*	41 3*	42 6†	42 6
Clydesdale Collieries	19 0*	20 0*	20 6*	19 6*	--	
Con. Diamonds	13 10*	13 9*	14 0	13 9	13 10*	14 0
Con. Investments ...	25 0†	23 3†	—	22 6*	22 6*	23 0
Con. Langlaagtes ...	—	14 0*	—	14 3*		
Con. Main Reefs ...	9 3*	9 4*	9 3*	9 3*	9 4*	9 6*
Con. Mines Selection	10 6*	10 6*	10 9*	11 0*	11 0*	12 0*
Coronation Collieries	30 0*	30 0*	30 0*	30 0*		30 0*
Coronation Frees. ...	0 6*	0 0*	0 7	0 7*	0 7*	
Coronation Synd. ...	4 4*	4 9	4 10*		5 0†	5 0*
Crown Diamonds ...	5 1*	5 1*	5 0	4 10*	5 0	5 1*
Crown Mines.	35 0*	35 0*	35 9	35 6*	35 9*	36 0
Daggafontein Mines	2 8	2 8		2 8	2 9†	2 8
East Rand Coals ...	1 7*	1 9†	1 8	1 6*	—	1 6*
East Rand Deeps ...	0 9*	0 9*	0 8*	0 9*	0 9*	0 9*
East Rand Minings	10 0*	10 0*	10 0*			
East Rand Props. ...	7 0†	6 6	-	6 7*	6 7*	6 9
East Rand Debs. ...	–	£82*	£85†	£85†	£85†	£85†
Eastern Golds ...	—	0 6*	0 6	0 6*		0 6*
Frank Smith Diam.	3 9*	3 9*	3 9	4 0†	4 0†	3 9
Geduld Props. ..	51 0	52 3	52 6*	53 0	52 6	53 6
Geldenhuis Deeps ...	5 9*	6 0*	—		6 0*	6 0*
Glynn's Lydenburgs	8 9*	9 3*	9 6*	10 0*	10 3*	10 3*
Govt. Areas	77 0*	77 6	78 0	77 9	77 6*	78 3
Hume Pipes	10 6*	11 0*	11 0*	11 0*	11 0*	11 3
Knight Centrals ...	4 1*	4 1*	4 2*	4 2	4 3	4 3
Lace Props. ...	7 0*	8 0†	7 6*	7 6*	7 6*	7 6*
Leeuwpoort Tins ...	6 9*	6 9*	6 9*	9*	7 0	6 9*
Luipaardsvlei Ests.	1 4*	1 6*	1 9*	1 7*	1 7*	--
Lydenburg Farms ...	4 9*	4 8*	4 9	4 7*	4 8*	4 8*
Meyer and Charltons	—		60 0*	60 0*	-	60 0*
Middelvlei Estates...	1 6*	1 7*	1 7*	1 6*	1 6*	1 6*
Modder B's	25 0*	25 0*	26 0*	26 6	27 6	29 0
Modder Deeps	39 9	40 6	40 6	41 0	41 0	41 3
Modder Easts	8 0*	8 3	8 3	8 3	8 6	8 10
Natal Nav. Col ...	-	28 0½	28 9*	29 3	29 6	29 3*
National Banks ..	£11†	—	£11†	—		£11†
New Eland Diam.	-	22 6*	27 6†	22 6*		
New Era Cons. ...	6 0	5 10*	5 10*	5 9*	5 9*	6 0
New Geduld Deeps	1 4*	1 4*	1 5	1 5*	1 4*	1 4*
New Kleins.	5 9*	6 0	6 3	6 0	6 5*	6 5*
New Modders	66 6	67 3*	67 6*	67 9*	67 6*	68 9
New Primrose ...	4 6*	4 9*	4 6	4 9*	4 9*	4 9*
New Unifieds	3 6*	3 6*	3 6*	3 9*	3 9*	4 3
New State Areas ...	27 9	28 3	27 9	28 3*	28 9	28 9
Nigels ...	5 3*	5 3*	5 6*	5 6*	5 6*	5 6*
Nourse Mines ..	11 3*	11 6	11 6*	11 6*	11 9	11 9
Pretoria Cements ...	41 6	41 0*	41 6*	41 6*	42 0*	42 0
Princess Estates ...	1 0*	1 1*	1 1*	1 1*	1 1*	1 1*
Rand Collieries... ...	1 0*	0 9*	0 9*	0 9*		0 9*
Rand Mines		—	41 3*			—
Rand Nucleus	1 0*	1 1*	-	1 1*	1 1*	1 1*
Rand. Central	10 6*	11 0	-	—		
Rand. Estates	15 3*	15 6*	15 7*	15 6*	15 6*	15 9
Rouxville Diam. ...	1 5*	1 5*	1 5	1 5*	1 5*	1 6
Roberts Victors ..	9 0	8 9*	8 9*	8 6*	9 0†	8 3*
Rooibergs ..	3 0*	3 9†	3 9†	3 9†	3 0*	3 0*
Ryan Nigels. ...	—	—	4 6†			
Rose Deeps	10 0*	10 6*	--	—	10 6*	10 6*
Simmer and Jacks...	3 3*	3 6*	3 4*	3 5	3 1½	3 6
S.A. Lands	4 0*	4 0*	4 2	4 3	4 2	4 2

	Fri. 31st	Sat. 1st	Mon. 3rd	Tues. 4th	Wed 5th	Thurs. 6th
Springs Mines	36 9	37 3	37 3	37 10½	38 0	38 6
Sub Nigels	11 0	11 3*	11 1½	11 6	11 9	11 9*
S.A. Alakah	14 0*	14 3*	14 3*	—	14 6*	14 0*
S.A. Townships ...	8 6*	8 6*	8 6*	8 6*	8 6	8 6
Transvaal Lands ...		13 6*		14 0*	15 0	15 9*
Trans. G.M. Estates	—	7 6*	7 6*	7 6*	8 0†	7 6*
Transvaal Silvers ...	17 9*	18 6*	19 0*	19 0*	19 0*	19 9
Tudors	0 6*			0 6*	—	—
Van Dyk	—	1 0	1 0*	1 1*	1 0*	1 0*
Van Ryn Deeps ...	60 6*	61 1	60 9*	60 6*	60 9*	61 0*
Village Deeps	7 9*		—	8 6*	8 9	9 3*
West Springs	8 0*	8 4*	8 0	8 9	9 0	10 0
West Rand Cons. ...	2 0*	--	2 6*		2 6*	2 6*
West. Rand Estates	3 6*	3 6*	3 6*	3 6*	3 8*	3 6*
Witbank Collieries...	35 6*	—	36 6*	37 0*	37 0*	37 3*
Witwatersrands	11 6*	—	—	—		11 0*
Wit. Deeps	10 0*	11 0	10 6*	10 3*	10 6*	10 6*
Zaaiplaats Tins	2 6*	2 6*	2 9†		2 9†	2 9†
Union 5 per cent. ...	£102¼*			£102½*	£102*	£102*

* Buyers. † Sellers. a. Odd lots. b. Ex London.

The Coronation Meeting.

At the extraordinary general meeting of the Coronation Syndicate, Ltd., held in Johannesburg on Thursday, the resolutions were carried unanimously. Laudatory speeches were made by Mr. Edgar Hyman and Colonel J. Donaldson, D.S.O., in praise of the scheme for the opening of Luipaardsvlei No. 10 and of the action of the directors, and particularly those of Mr. Harry Graumann, M.L.A., in so ably serving the interests of the shareholders. Under the new scheme the Coronation Syndicate becomes possessed of a large amount of capital wherewith to develop its assets, of which the most valuable is the farm Luipaardsvlei No. 10. On this property two rich reefs have been proved to exist at a comparatively shallow depth, and under the Gold Law the Coronation Syndicate will be entitled to 923 reef claims. The possibilities of this concern are therefore exceedingly attractive. In our next issue we shall reproduce in full the speech made by Mr. Gustav Sonn at the meeting, and we then hope to give some additional particulars of a proposition which may in the course of the next year or two prove itself to be one of the largest potential producers of gold on these fields.

INVESTORS' DIARY.

Meetings will be held in Johannesburg unless otherwise stated: —

April 28.—Coronation Syndicate.

May 23.—S.A. Land and Exploration Co., 12 noon.

May 29.—West Springs, 11 a.m.; Daggafontein Mines, 11.30; Springs Mines, 12 noon; Brakpan Mines, 2.30 p.m.; Rand Selection Corporation, 3.15 p.m.; New Era Cons., 3.45 p.m.

June 3.—Transvaal Coal Corporation, 10.30 a.m.; Anglo-American Corporation, 11 a.m.

May 26.—Modder Deep Levels, 12 noon; Geduld Proprietary Mines, 3 p.m.

June 8.—New Primrose, 11.30 a.m.; New Unified, 11.45 a.m.; Langlaagte Estate, 12 noon; Randfontein Central, 3 p.m.; Randfontein Estates, 3.30 p.m.

June 9.—Consolidated Langlaagte Mines, 10.30 a.m.; Witwatersrand G.M. Co., 10.50 a.m.; New State Areas, 2.40 p.m.; Van Ryn Deep, 3 p.m.; Government Areas, 3.45 p.m.

The annual meeting of Lydenburg Gold Farms, Ltd., is called for May 16. Of the 250,000 shares of 4s. issued it is proposed to pay off 1s. 6d. per share.

TRADE AND INDUSTRIES SECTION.

Week in the Mining Material and Engineering Trades.

GRADUALLY IMPROVING BUSINESS CONDITIONS ANTICIPATED—IRON AND STEEL—TIMBER AND BUILDING MATERIALS—HUME PIPE CO.—ELECTRICAL GOODS—UNION'S ELEVATORS—OILS AND COLOURS—INDUSTRIAL DISPUTES AMERICAN TRADE REPORT—METAL MARKET QUOTATIONS.

General.

There is a feeling in commercial circles this week that confidence in business is gradually returning, that we have at long last turned the corner of the depression which has been with us for so long, and that it is now simply a question of getting money into circulation again. Business will resume its normal level as soon as the mines are properly working with their full complement of native labour. This desideratum in its very nature is bound, however, to be a rather slow process, and with the best will in the world will take the mining industry many months to accomplish. In the meanwhile, of course, the mines will only be in a position to partially absorb the white workers offering, and this lack of employment is certain to be reflected in commercial activities in the restricted spending power of the community. To the initiated it is not at all surprising that the industry, after such a tremendous upheaval as has occurred, will find it a matter both of time and difficulty to get back to its former high water mark, and patience will necessarily have to be exercised by all of us for the next few months. But as the months pass we shall know that the industry is making steady progress and approaching the full-load period which will spell prosperity to the community. As regards the mines, they have restricted their purchases for so long a period that they must now come into the market and replenish stocks which have been allowed to dwindle to almost zero levels owing to recent labour troubles and the general state of incertitude which has prevailed concerning world problems for many months past. At the moment it may be stated that merchants, after their enforced inactivity, are only too glad to turn over their stocks at anything like a profit, or even without profit, in order to cover incoming consignments. It may be stated generally that merchants, knowing the great difficulties to be overcome by the industry in getting again into full swing, are not looking for any miraculous spurts in business for some little time to come, but are conscious that better things are in store for the Rand as soon as things have settled down and we enter upon a new era of solid work conforming more in its efficiency and economic conditions to the problems now confronting us.

Commercial opinion may be summed up in the statement that although business at the moment is quiet, the undercurrent is very optimistic; that a gradual improvement in trading will be witnessed as the industry month by month increases in volume; and, in the opinion of some judges, we may see at no far distant date such an expansion of the gold and coal mining industries, and with it naturally of general commercial activity, as the Witwatersrand has never before seen.

Iron and Steel.

Business during the past week, although not booming, has shown signs of healthy improvement. Prices are not what they should be owing to forced liquidation, but most merchants realise that the present sales at below replacement values are inevitable and look for a higher level later on. The Commercial Exchange was fairly active with a not inconsiderable turnover, but of course present prices are no indication of replacement values in many lines, but show anxiety to sell in order to make room for further stocks to arrive. A very large importer of mining material is of opinion that, taking everything into consideration, things are shaping well and showing a firming tendency in some lines. If, however, the strike in America and threatened lock-out in England really turn out as bad as anticipated, they will be bound to react on South Africa and bring about a shortage of material here. Should the strikes prove of long duration, local stocks would soon be cleared up, as during the past few months merchants have practically refrained from indenting for material, and prices would rise. There appears to be now much less talk than three months or so ago about importing Continental goods—people are not so anxious about that material now—and buyers are now stipulating that quotations should state country of origin, this being particularly the case in respect of large quantities asked for. There is a shortage apparent in some lines, half inch plates, for instance, are now somewhat scarce.

Latest Quotations.—Dunswart iron, 22s. per 100 lb. basis price; Union Steel Corporation, Ltd., 25s. basis; imported iron and steel, flats, rounds and squares, from 28s. 6d. to 35s.; channels and joists, 30s. to 32s. 6d.; imported angles, 32s.; smaller sizes, 33s. 6d.; tee iron, 32s.; shafting, ½ in. down to 3-16 in., 7½d. to 9d. lb.; ⅝ to 1½ in., 6½d.; 1¾ in. to 6 in., 5½d.; steel plates, 1-16, ⅛, 3-16, 23s. 6d.; 10 x 5 and larger, 25s.; spring steel, 7½d. to 8½d. lb.; bolts and nuts, hexagon, round, ⅜, 8½d. to 9¼d. lb.; ½ in., ⅝ and ¾, 40s. to 45s. per 100 lb.; hexagon nuts, ⅜, 8½d.; ½ in., ⅝ and ¾, 7½d.; fish plates, bolts and nuts, ⅜ in., 8d. lb.; ½ in., 6d.; ⅝ in., 5½d.; ¾ in., 5d.; dog spikes, 35s. per 100 lb.; rivets, ¼ in., 11d.; ⅜ in., 9d.; ½ in. and ⅝, 37s. 6d. to 40s. per 100 lb.; brass rods, ¼ in., 1s. 5d.; ⅜ in., 1s. 3d.; ½ in 1s. 2d.; ⅝ in. and upwards, 1s. 1d. per lb.; hexagon brass rods, 1d. lb. extra; copper rods, ⅜ in., 2s.; ½ in., 1s. 11d.; ⅝ and upwards, 1s. 9d. lb.; tool steel, 2s. 11d. to 3s. 3d.; brass sheets, 1s. 10d. to 2s. lb.; copper sheets, ¼ in. to 18 gauge, 1s. 10d. lb.; 20 gauge, 1s. 11d.; 22 gauge to 28 gauge, 2s. lb.; firebox copper, 2s. lb.; copper tubes, ¼ in., 3s. 3d.; ⅜ to ⅝ in., 2s. 6d.; ¾ to 4½ in., from 2s. to 2s. 4d. lb.; phosphor tin, 2s. 11d.; ingot tin (Lamb & Flag), 2s. lb.; ingot lead, £28 per ton; drill steel, 6½d.; hollow, 9¾d.; 1¼ in., 9d. to 10½d.; wire nails, 30s. to 35s.; shovels, 52s. 6d. to 55s.; wheelbarrows, 47s. 6d.; picks, 37s. 6d. to 67s. 6d.; pick handles, 21s.; hammer handles, 14 in., 7s. 6d.; 18 in., 9s. 6d.; 24 in., 13s. 6d.; 30 in., 18s. 6d.; 36 in., 35s.; barbed wire, "Shorthorn," 69 lb., 13½ gauge, 22s. per coil; plain galvanised fencing wires, No. 8 gauge, 100 lb. coils, 27s. per coil; No. 10 gauge, 100 lb. coils, 29s. per coil; No. 12 gauge, 100 lb. coils, 32s. per coil; bulb tee fencing standards, 14 lb., 27s. per dozen; 12 lb., 25s. per dozen; black baling wire, 14 gauge, 19s. per coil, 100 lb.; 12 gauge barbed wire, 22s. per coil, 96 lb.; plain wire, No. 8 galvanised, 21s. per coil, 100 lb.; fencing standards, 12 lb., 20s. per dozen; screening, 3s. to 9s. 6d. per sq. yd.; cyanide, 1s. 7½d.; zinc shavings, 1s. per lb.

African Iron and Steel Products, Ltd.

This company, in common with other industries, was closed down for a while during the recent trouble, during which time advantage was taken of doing a lot of useful work on the property which will prove of great assistance in the future. The Sheeley liner is now being recognised by the large groups as giving a high percentage of efficiency, and compares most favourably with anything imported. In the short interval between starting up and to-day, the company have received sufficient orders in liners, grids and other semi-steel specialities to keep the works fully occupied for the whole of the month, which speaks for itself, and is sufficient proof of the popularity of the products of the company. The company is making an exhibit of its manufactures at the forthcoming Agricultural Show.

Union Steel Corporation (S.A.) Ltd.

This company reports getting into its stride again, and that everything is running smoothly at the works. The company has already made some deliveries and is looking forward to a gradual recovery in conditions—an improvement which, though slow, is expected to be a big one. The company, as usual, will be well to the fore in the approaching Agricultural Show. The company has secured the contract for approximately 3,000 tons of round steel reinforcing rods for the 36 concrete elevators shortly to be erected to the order of the Union Government. The rounds are to be from ¼ in. up to 1½ in. in diameter, and there are 700 tons of flat iron, 1 in. by ¼ in. The quality is to be up to British standard specification for reinforcing steel.

Second-hand Machinery.

The market in regard to second-hand machinery goods is still firm and dealers are obtaining prices asked. There have been a good many inquiries during the past week for boilers and engines, and particularly for small and large batteries. There appear to be a few syndicates of working men which are taking up small propositions. The Rand is much in favour with many, and attention is now being turned to the southern reefs, which in time are bound to be worked on a large scale. In the meantime the smaller man is opening up a few of these reefs, which show anything from 3 to 20 dwts. There is still construction work being carried on in some of the new big mines, and where second-hand material can be obtained it is being bought, such as girders, plates and crushing machinery. In view of the Springs Mines recovering their gold through crushers and tube mills particularly instead of batteries, there is now a demand for tube mills by those of the more progressive small holders, as they have been proved to work more effectively in recovery and at a considerably less cost of working. Although there has been no great spurt as yet in second-hand business, this is anticipated to come in a few weeks when the mines are in a more settled state; otherwise the second-hand machinery market is very firm and stocks are well held. Tenders closing on 7th inst. are being invited for the purchase of the balance of the machinery and plant on the Glencairn Main Reef G.M. Co., Ltd. (in liquidation), consisting of piping, engines, boilers, pumps, compressors, tanks, etc.

Mr. Hirsch, resident engineer of the U.S.A. Steel Products Co., has left Johannesburg for a six months' tour of England, the Continent and America.

Steel Discovery.

According to the *Morning Post*, a new steel known as the Vibrac has been produced at the Openshaw works of Armstrong, Whitworth & Co. It is claimed in connection with this steel that it is the greatest achievement in metallurgy since the introduction of alloy steels. The new steel, it is held, has overcome the disease known as "temper brittleness," and thereby solved a problem which for the past ten years has baffled the minds of metallurgists throughout the world. Vibrac is an alloy steel of the nickel chrome variety, possessing higher mechanical properties than existing steels and capable of giving a high and regular impact test. The impact value in ordinary nickel chrome steel is most erratic, and varies from two to sixty ft. lb. under similar conditions. With Vibrac, according to tests, a regular result of about 70 ft. lb. is obtainable, which means that "temper brittleness," which makes ordinary alloy steel unreliable in certain conditions, has been completely overcome.

Engineering Dispute in England.

Latest advices from London are that direct negotiations between the employers and the men have been resumed, and hopes are entertained that the present conference may lead to a satisfactory settlement.

Engineering Shops.

Business still continues steadily in the local shops with prospects of gradually improving conditions as time passes.

Timber and Building Materials.

In the timber trade there is very little change to report this week. There has been a little more business done as the mines have started buying again, but there has been no rush; the demand from contractors has been fair. The tendency overseas is a hardening one, but so far there has been no reflection of higher prices here. But merchants cannot continue selling at to-day's prices without making losses, and the tendency is undoubtedly for timber prices to go up. Building schemes, which have been in abeyance for many months, are now beginning to materialise, said an influential importers, and now that building wages are coming down we should see great activity in the near future.

Timber prices.—3 x 9 deals, 1s. to 1s. 1d.; scantlings, 11d.; beaver boards, 4¼d. to 4½d.; floorings, 6¼d. to 6½d.; ceilings, 4½d. to 4¾d.; Oregon, 6s. 6d. to 7s. a cube; pitch pine, 7s. 6d. to 8s.; corrugated iron, 8¼d. Furniture timber: Burmah teak, 17s. 6d. per cube here for first quality, 14s. 6d. for second at the coast; American oak, 1 in., 10½d.; 1½ in., 11d.; 2 in., 11½d., at coast; and Japanese oak, 1 in., 1s. 1d.; 1½ in., 2 in., 1s. 2d., at coast; West African mahogany, 1 in. to 4 in. thick, 26s. 9d. to 27s. 6d. per cube at coast; Rhodesian mahogany, 9s. per cubic foot at mills; Honduras mahogany, 30s. per cubic foot; American yellow pine, 1s. 6d. per foot of 1 x 12 here; American pine shelving, 10½d. per ft.; 3-ply wood, 3 m.m. up to 5 m.m., alder and birch, 4d. to 6½d. per sq. ft.; oak and teak, 3-ply, 11d. per sq. ft. Prices for bricks are: Klompje bricks, 25s. per 100 at works; fire bricks, £10 per 1,000 at works; mixed, 70s.; wire-cuts, £4 10s. to £5; and £5 for pressed per 1,000, at kilns; columns from 20s. to 30s. according to size.; roofing tiles, Marseilles, £25 per 1,000 at the works; chimney pots, 12 in., 7s. 6d.; 15 in., 9s.; 18 in., 10s. 6d.; lead oxide, 16s. per 100 lbs.; white lime, 7s.; unslaked, 10s. 6d. per 180 lb. bag; 8 lb. bag, 1s.; blue lime, 4s.; blue plaster lime, 5s.; cement, 11s. 6d. a bag; damp course and roofing, 36s., 54s. to 55s. for 1 to 3-ply. There have been more inquiries for bricks, etc., this week than for a long time past, but prices remain unchanged.

Second-hand Timber and Iron.

Dealers report that things are beginning to move and are looking to busy times in the near future. Stocks of second-hand timber and iron are not too abundant; the former is selling at 8d., the latter at 6d.

The Hume Pipe Co. (S.A.), Ltd.

The Hume Pipe Co. report a considerable improvement in the position regarding orders for concrete pipes and concrete products generally. Large orders have been received during the last month for pipes, one order alone running into some 80,000 feet of piping. The business in concrete specialities is growing rapidly, and the many evidences of these concrete specialities are to be seen in Johannesburg and neighbourhood. For instance, the whole of the slab pavements round the Chamber of Mines' new buildings have been supplied by the Hume Pipe Co. Tramway and lighting poles, telegraph poles, large verandah columns, etc., are being railed all over the Union. At next week's Agricultural Show the company has secured considerable space in the machinery hall for the exhibition of some of its products.

Electrical Goods.

An important dealer in electrical goods said that things [illegible] getting better and business improving by degrees. [illegible] the indications are that they will increase rather than decline. In wiring especially, which has recently declined considerably, the tendency will be upwards as the cost of replacement [illegible] the price at which it has recently been sold. Porcelain is much about the same. [illegible] have undergone no great change. This dealer said inquiries from the country districts and even from far afield are now of a very encouraging nature. Electrical goods are coming in freely and there are now no shortages in any lines. The recent strike in Germany has affected deliveries from there very materially, but consignments are expected shortly.

The Union's Grain Elevators.

The main contractor for the elevators, Mr. A. W. [illegible], has engaged to deliver the whole of the elevators completely erected and in running order by November 1, 1924, and will be responsible to the Railways and Harbours Administration for the whole of the work, including erection. The elevator at Durban, which will be the largest, will have a capacity of [illegible] lb. It will be built at Congella on the new wharfage area at the head of Durban Bay, which has been reclaimed in recent years alongside the main railway to the Transvaal. The Capetown elevator will have a capacity of 60,000,000 lb., and will be erected in the docks area. The country elevators will vary in size from 3,600,000 lb. to 11,600,000 lb. capacity. The provision of these elevators is expected to prove of very great value to the maize growers of South Africa, and the completion of the works is bound to place the Union in a very favourable position to compete with other countries in the grain trade. The contract for the 38 heavy oil engines for driving the grain elevator machinery and for electric lighting purposes has been secured by Messrs. Ruston & Hornsby, Ltd., and are to be approximately 2,500 brake horse power.

Oils and Colours.

White lead in oil, small sizes, 10½d. lb., 39s. per 50 lb. kegs, red lead, 10d. per lb. in 6¼ lb., 12½ lb., and 25 lb. kegs, 9d. per lb. in 50 lb. kegs; dry white lead, 1s. 6d. per lb.; linseed oils, raw or boiled, large bottle 2s. 6d., small bottle 1s. 6d. each, 7 lb. tins 7s. 6d. each, 4 imp. gall. 24s. 6d.; spirits of turpentine, large bottle 3s. 6d., small bottle 2s. each, 12s. 6d. per ·83 imp. gall.; turpentine substitutes, 5s. 6d. per tin, each 5-6th imp. gall.; linseed oil putty, in 100 lb. drum bulk, 4½d. per lb.; colours ground in oil, 1s. 6d. to 4s. 6d. per lb.; dry colours, 6d. to 10s. 6d. per lb.; colours ground in water, 1s. to 2s. per lb.; in turpentine, 2s. 6d. to 10s.; in gold size, 2s. 6d. to 5s. 6d. per lb.; ready-mixed paints, 1s. 6d. per lb., 75s. per 70 lb. drum; roof paints, 16s. per 14 lb. tin, 75s. per 70 lb. drum; enamels, 45s. to 50s. per imp. gall.; varnishes, 25s. to 47s. per imp. gall.; pumice stone, 1s. 3d. per lb.; beeswax, 1s. 6d. per lb.; carbolineum, 5s. per 5-6th imp. gall. tin, 22s. 6d. per 4 imp. gall. tin, bottles 2s. 3d. each; alum, 9d. per lb.; creosote, 4s. 6d. per 5-6th imp. gall. tin; gum arabic, 3s. 6d. per lb.; resin, 8d. per lb.; caustic soda, 1s. 3d. per lb.; coal tar, 4s. 6d. per ·83 imp. gall.; Stockholm tar, 9s. 6d. per ·83 imp. gall.; common glue, 10d. per lb.; good quality glue, 1s. 3d.; finest Russian, 1s. 6d.; gold leaf, English plain, per book 3s. 9d.; transferred, per book, 4s. 3d.; aluminium leaf, plain, 1s. 9d. per book; transferred, 2s. per book.

Penrol (S.A.), Ltd., has, it is announced, purchased the assets of the Natal Distilleries, Ltd. (in liquidation) for £25,000. The plant of these distilleries has a capacity of 100,000 gallons of alcohol per month, and the assets are estimated to be worth £62,500. This purchase ensures the future stability of the Penrol Company, and it will now be possible to place Penrol on the market at a much cheaper figure than originally anticipated. It is hoped to establish a factory for manufacturing Penrol in Johannesburg at an early date.

The strike among the Indian employees at Abadan of the Anglo-Persian Oil Company has collapsed and the ringleaders have been repatriated.

Industrial Disputes.

The coal strike which commenced in America on Saturday last affects over half a million miners. The accumulated stocks of coal represent six weeks' supplies, and the Government anticipate that non-unionist miners can produce 50 per cent. of the normal output. The daily loss of coal is estimated at 1,500,000 tons and 2,800,000 dollars in wages.

In Canada the Senate has decided to appoint a committee to report on the wages dispute between the British Empire Steel Corporation and the United Workers' Union of America, Nova Scotia. 12,000 miners are affected by the Canadian dispute.

S.A. Railways Traffic.

In his report for the quarter ended December 31 last Mr. H. W. Cavill, Divisional Superintendent of the S.A.R., states, *inter alia*:—About 50 tons monthly of asbestos which is mined in the Kaap Valley is being despatched from Godwan River to Durban for export to England. From the Lydenburg district about 300 tons of mining timber were forwarded during November and December, and very large quantities are waiting to be cut. There was an increase of 25 per cent. in mining poles despatched from Rosehaugh and from Hendricksdaal during the last quarter of last year, as compared with 1920, the totals being 547 and 364 tons respectively.

Approximately 1,000 tons of iron pyrites were forwarded from Klein Sabie siding to Kempton Park during the last quarter of 1921. The industry continues to maintain a steady output.

It has been decided to start an oil-shale depôt at Grenfell, machinery for which is on order. Improvements in machinery on several properties in the Breyten district by the introduction of electrical coal cutters.

The development of the various copper mines in the Warmbaths and Pietersburg districts is progressing favourably. Quantities of machinery still continue to come forward.

American Trade Report.

New York advises that with the rise in sterling business generally has become much brisker. The grain markets are advancing, cotton acreage increasing, steel manufacturers are enlarging production, and with the possibility of higher prices the situation is more assuring. February exports were 251 million dollars; imports, 217 million dollars.

The petrol market is considerably stronger. In the paraffin market the heavy demand is decreasing on account of the seasonal conditions. The motor trade is very satisfactory, and manufacturers are increasing production.

The Siemens Electrical Co.

According to the annual report of this company, they have lost over 161½ million marks owing to the appreciation of the foreign exchange, especially in the case of Switzerland.

Financial.

Rush on British Savings Certificates.—Since the British National Savings Certificates have been on offer 526,998,353 have been sold, representing a value of £408,000,000, which speaks well for British thrift.

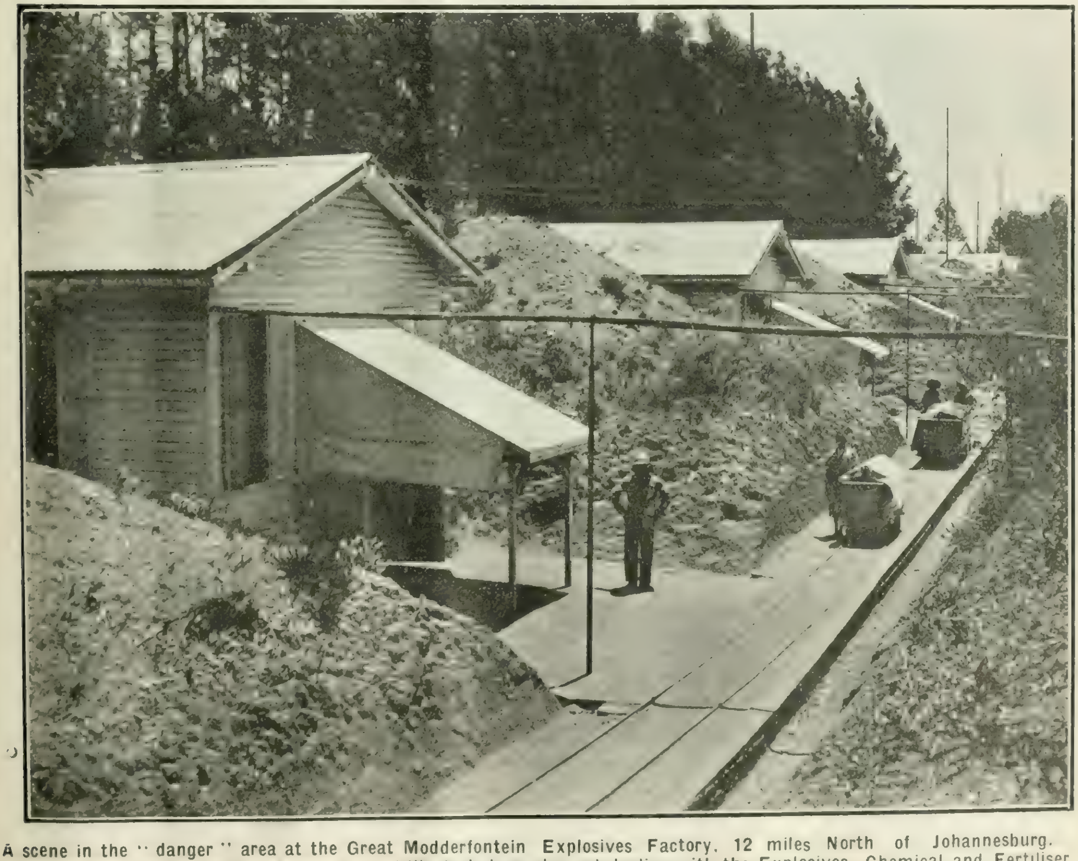
The prospectus has been issued for a Commonwealth of Australia Government 5 per cent. loan of £5,000,000 which is to be issued at 96.

Special Explosives, Fertilisers and Chemical Works Supplement.
Mineral Developments "Up North."

The South African
Mining & Engineering Journal
THE ONLY WEEKLY MINING PAPER IN THE CONTINENT OF AFRICA.
Established 1891.

Vol. XXXIII., Part I. JOHANNESBURG, TRANSVAAL, SATURDAY, APRIL 15, 1922. No. 1594.

At the Modderfontein Factory.



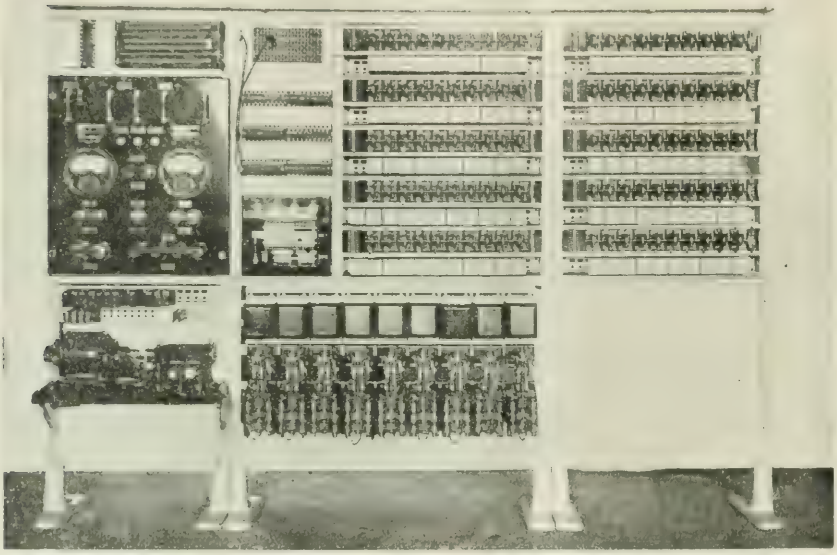
A scene in the "danger" area at the Great Modderfontein Explosives Factory, 12 miles North of Johannesburg. This number of the Journal contains a special illustrated supplement dealing with the Explosives, Chemical and Fertiliser Factories of the Union.

SIEMENS BROTHERS

AUTOMATIC TELEPHONES

In addition to a number of
PUBLIC EXCHANGES FOR LARGE TOWNS
we have supplied scores of
PRIVATE AUTOMATIC EXCHANGES

Our EXPERIENCE is wide—Our SATISFIED CUSTOMERS numerous



PRIVATE AUTOMATIC EXCHANGE BOARD 100 Working Lines

CHEAP TO MAINTAIN—SIMPLE TO WORK

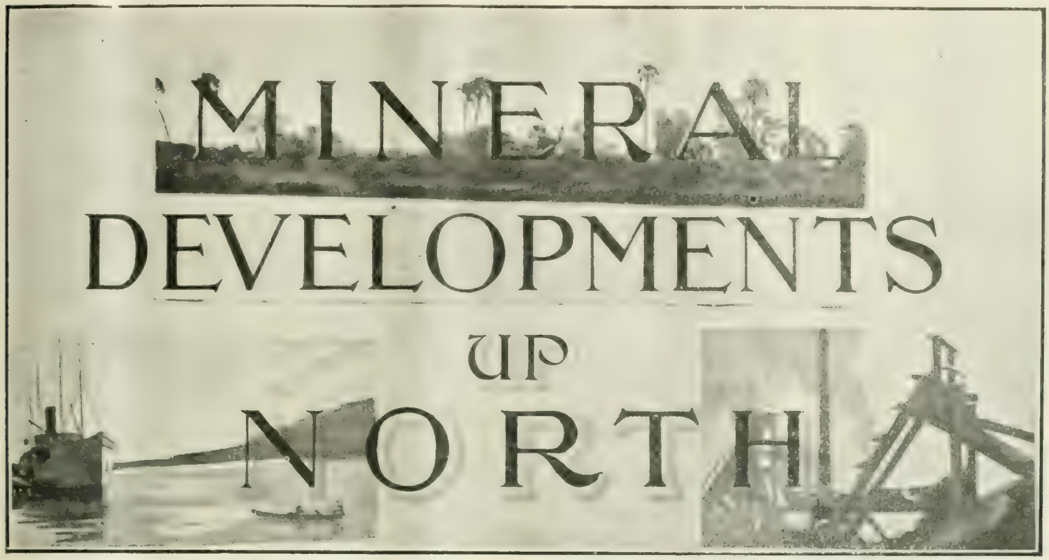
IMMEDIATE DELIVERY FROM LOCAL STOCK

Representatives in South Africa:

A. J. G SIMPSON, A.M.I.E.E.
African Life Buildings, 85, St. George's St.,
CAPE TOWN.
P.O. Box 239 Cape Town. Telephone 1202 Central.

G. H. B. BERNARD, A.M.I.E.E.
9-10, Cotts Buildings, Rissik and Fox Sts.
JOHANNESBURG.
P.O. Box 7404 JOHANNESBURG. Telephone 408 Central.

Telegrams: "SIEMENS"



MINERAL DEVELOPMENTS UP NORTH

IMPORTANT DISCOVERIES IN SEVERAL TERRITORIES—ANOTHER SHAMVA IN MASHONALAND?—WANKIE AND BY PRODUCTS—KATANGA'S GREAT PROJECTS—BELGIAN CAPITAL IN THE ZAMBESI BASIN—KASAI DIAMONDS: AN IMPORTANT DEAL—ANGOLAN OIL FIELDS—A GOLD DISCOVERY ON THE NILE—CONGO DIVIDE—A BIRD'S EYE VIEW OF IMPORTANT DEVELOPMENTS—"MINING JOURNAL'S" COMMISSIONER TO INVESTIGATE—A FORTHCOMING PUBLICATION.

Whilst mining in the Union of South Africa has been under a severe semi-industrial quasi-political cloud during the past few weeks, the mineral industry in the vast territories which lie to the north of us is showing signs of very considerable expansion. In these northern areas the political and industrial developments of the various mining fields have not yet gained for the territories concerned a status of democracy which will cause and attempt to justify such violent upheavals as we recently have witnessed on the Witwatersrand. And, therefore, in the Far North and in the heart of an Africa which has slumbered for ages and which is only now beginning to bestir itself into big commercial activity, it is the pick of the prospector and the perseverance of the pioneer mine worker which mark the measure of development rather than the tongue of the agitator and the diatribe of the Parliamentary debater which seem to be more important considerations in South Africa than pennyweights per ton or questions of ore reserves.

Trade Unionism "Up North."

It is true that in Rhodesia and even in the Belgian Congo trade unionism has obtained a grip sufficiently strong to enable the "leaders" of the movement to call one or two strikes during the past few years. But these down-tools periods have been of a comparatively peaceful nature and did not last for very long. Up north, in fact, the mining industry is not at the mercy of party politics or Trades Hall demagogues, and whilst we in the Union have been struggling in a maelstrom, the Rhodesias, the Congo, Angola, Portuguese Zambesia, and Africa generally as far north even as the Lado Enclave appear to have been progressing in a quiet and unostentatious way with mineral discoveries of an important nature.

A Forthcoming Important Publication.

In the near future THE SOUTH AFRICAN MINING AND ENGINEERING JOURNAL will publish a special illustrated supplement which it is intended to perpetuate in the form of an annual year book, which will not only review in detail all the various branches of the mineral and associated industries of the Union and the South-West African Protectorate, but will deal also with mining in Rhodesia, the Congo and Zambesia and will bring the romance of the search for minerals in Southern Africa up to date by descriptions of the various new discoveries recently made in these comparatively little known districts. THE SOUTH AFRICAN MINING AND ENGINEERING JOURNAL is the only technical publication which is in a position to give reliable first-hand information as to mining developments in all these remote portions of the African Continent, and it will be our policy to enlarge this sphere of the paper's usefulness. In the course of the next few weeks a special commissioner of the Journal will be visiting the various mineral districts to the north of the Limpopo River, that is to say, in Southern and Northern Rhodesia, in the Congo Belge, and in Zambesia, and possibly further afield, and the results of his travels and investigations will be incorporated in a series of special illustrated articles which will appear in the big year book which will be issued before the end of 1922. It may also be stated that a business representative of the Journal is leaving for Europe early next month, and that amongst the missions which he will there undertake will be the interviewing of the chairmen, managing directors, and consulting engineers of these up-country mining concerns with a view to insuring the completeness of the data which will be contained in our forthcoming Special Southern African Number.

Recent Discoveries and Developments.

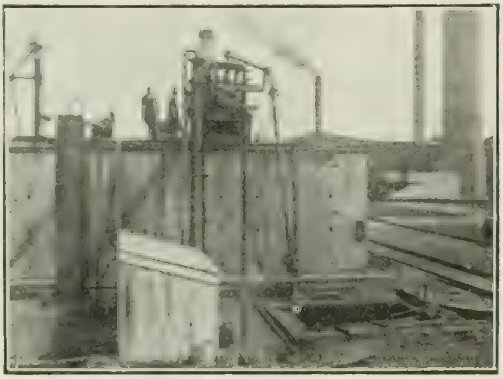
In the meantime, it will be worth while touching on some of the important discoveries and developments which are now engaging much interest in these northern territories and which will be written on at much greater length by our special commissioner. In Southern Rhodesia there is considerable excitement in regard to the highly promising results secured by the initial exploitation of the Zebra blocks of claims in the Hartley-Gatooma area. It may be recalled that at the last annual meeting of the Rhodesia Chamber of Mines Mr. J. G. MacDonald, of the Gold Fields Rhodesian Development Company, referred to new discoveries, and expressed the guarded opinion that one or two of these recent finds might, before very long, develop into important mines.

Another Shamva?

It now appears that highly encouraging results have been obtained from the [illegible] property, and although it is as yet impossible to indicate the extent of the mineralised area, but that it is considerable there is no doubt. The attention of engineers, prospectors and samplers at the moment is [illegible] to a quartzite kopje about 300 feet high and it is believed that further operations will reveal a payable property, which, it is suggested, can be worked on much the same lines as the Shamva Mines in the Mazoe district. It is understood that the Gold Fields Rhodesian Development Company has obtained an option over the property.

Other Minerals.

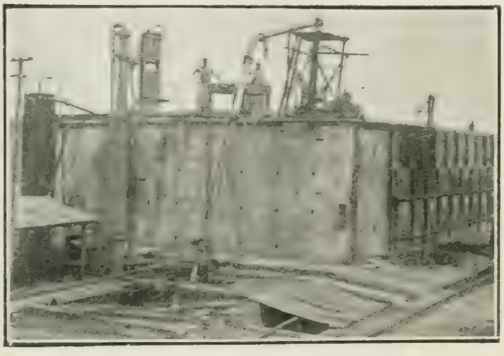
Several other attractive gold-bearing ventures are, we understand, now being exploited in other parts of Southern Rhodesia, and it may be remarked that interesting developments in regard to other minerals, and particularly asbestos and chrome iron ore, are reported. Then, too, as to coal, it is important to learn that the big Wankie proposition—certainly one of the largest coal ventures in the world—is initiating an important scheme of development of the by-product industry.



The By-product Plant at Wankie.

Wankie and its By products.

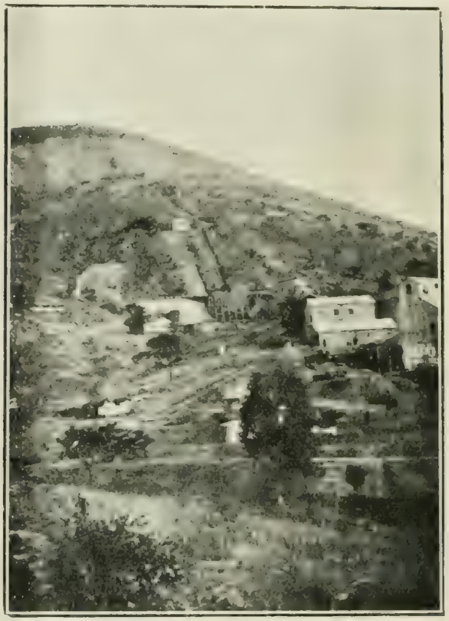
We are indebted to a Rhodesian correspondent for the accompanying two general views of a small experimental plant operating two ovens only which is in operation at Wankie. Our correspondent, who has had large experience of by-product works overseas, as well as in this country, writes: "The quality of the coal in Wankie is good, as compared with South African coal, and it can be brought to surface very cheaply. I am informed it is not, however, to the sale of coal that the reconstituted Company will look for its principal profit. It is to be the carbonisation of coal for its contents, in the shape of its tar and resulting oils, ammonia, etc., and this branch of the Company's business is expected to prove very lucrative. Those energetic and far-seeing gentlemen, Mr. Thomson, general manager, and Mr. Darby, colliery manager, who now control the destinies of the Wankie Colliery Company, and those who are expert in the coal by-product business are most enthusiastic as to the Company's future. Incidentally, it may be mentioned that the Company possesses a well-equipped colliery and coal lands calculated to extend well over 75 square miles of coal saleable in course of time at a profit, or it may quite likely be decided to deal with it for its by-products."



Wankie By-product Plant: Another view.

Katanga's Immense Projects.

Further north again the Union Miniere Company is preparing tremendous schemes for the increased development of and production from the Katanga Mineral Field and for the linking up of this immensely rich portion of the great Belgian State with Lobito Bay—the natural outlet of and key to Central Africa.



The Great Shamva Gold Mine, Mashonaland. According to reports from Rhodesia, another mountain of auriferous ore has been discovered in the Gatooma area.

A Congo Diamond Deal.

To the north-west of Katanga is the alluvial diamond field of the Kasai Basin, of which this Journal gave some informative particulars a few months ago. Of this area we learn that recent exploratory work has determined the existence of further large areas of gem-bearing gravels. According to a recent message from London, "the last vestige of competition from the rough diamond market has been eliminated by the Anglo-American Syndicate taking over the Congo output, which has formerly been handled in Antwerp." The Anglo-American Syndicate, in which the powerful Morgan Trust is largely interested, recently bought out all the German South-West diamond interests, besides having an unofficial working agreement with the South African

Diamond Syndicate, which also has its headquarters in London. It is reported from Belgium that the Anglo-American Syndicate has just purchased eight million francs worth of Congo diamonds. A prominent diamond dealer expresses the opinion that the foregoing arrangements will have a very firm effect on the market.

Angolan Oil Fields.

To the south-west of the Kasai are the West African oil fields, in which American capital is largely interested. According to a message from New York, dated April 7, the Sinclair Consolidated Oil Corporation announces that the Portuguese Government has published a decree granting permanent oil rights over 70,000 acres in Portuguese West Africa to the Companhia de Petroleo de Angola, which will be financed and worked under the management of the Sinclair Company. The Company describe the field as likely to surpass the Mexican and Persian oil fields.

Mineral Developments in Zambesia.

Turning now eastwards from Katanga, we learn from an authoritative source that the Zambesi Exploration Company has established the existence of an immense coal field in the vicinity of Tete, and that the Associated Company styled the Miniere Zambesienne, which has headquarters in Brussels and which is backed by influential Belgian capitalists, has a big scheme of mineral exploitation and development in prospect. Completion of the New Beira-Zambesi Railway line will, of course, greatly assist in the carrying out of these projects. To the south of these areas the Manicaland Mineral Concessions is also engaging in important mineral developments.

A Trommel Unit at work in the Congo Mining Fields.

A New Northern Gold Field.

Right up in the far north-east of the Congo the Kilo-Molo State-owned gold mines continue to yield substantial outputs, and promise more than ever to become producers of the precious metal on a very large scale. And in this somewhat remote portion of the Dark Continent an enterprise styled the Nile-Congo Divide Syndicate is reported recently to have discovered a new and important gold field. With regard to this discovery a mining contributor has written to the *Bulawayo Chronicle* as follows: The cabled news appearing in the *Chronicle* on Monday of last week, under the heading " A New Goldfield " will be of interest to many in Bulawayo, as the prospecting party referred to by the *Times* as the discoverers of this new field only left Bulawayo a few months ago under the leadership of Mr. " Dave " le Page, the hero of the world-disturbing discovery of the " Brontosaurus," or " Gazeka," in the Belgian Congo over two years ago. The Nile-Congo Divide Syndicate and its resultant expedition was formed under the auspices of Mr. Robert Williams and the group associated with him in the discovery and exploitation of the mineral resources of the Belgian Congo. Great secrecy was observed as to the destination and specific purposes of the expedition, but this is now at least partly revealed by the no doubt authentic information published by the *Times*. Taking ship at Beira, the party proceeded up the East Coast and landed at Port Sudan, and thence to Khartoum by rail. The next stage was a river journey of over 1,100 miles up the Nile to Rejaf, about ten miles from Gondokaro, and not many miles north of the Ripon Falls and the great Albert Nyanza Lake. Rejaf is the terminal point for steamboat travel on the Nile, and the prospecting party would then land and make for its objective, which will most probably eventually be found west of the great lake, in the same region as the jealously-guarded Belgian alluvial gold field of Kilo, which is reputed to be enormously rich.

Mineral Discoveries in Kenya.

As to Kenya Colony, it is reported that a discovery of coal has been made there, and there are also rumours of the finding of gold in payable quantities in what was formerly known as British East Africa.

Northern Territories Going Ahead.

It should be clear from the foregoing that whilst mining in the Union has been languishing—but languishing only temporarily, we feel convinced—prospectors have been busily engaged during the past few months in other parts of the great Continent and that a considerable amount of success has attended their efforts. It will be particularly interesting to obtain more detailed particulars of the various strikes and developments briefly referred to in this article, which only attempts to give a bird's eye view of what is taking place in some of the various mineral fields up north. And such additional information we hope to give in the forthcoming *magnum opus* of the paper which we already have referred to.

RYLANDS' STEEL WIRE ROPES

MANUFACTURED BY:

RYLANDS BROTHERS, LTD.,
WARRINGTON, ENGLAND.

SOLE REPRESENTATIVES FOR UNION OF SOUTH AFRICA:—

ARMSTRONGS & MAIN, LTD.,
84, Marshall Street,
JOHANNESBURG.

P.O. BOX 5988. **'PHONE 5203.**

LARGE STOCKS ON HAND.

SPECIALISTS ..

IN THE MANUFACTURE AND DESIGN OF

STRUCTURAL STEELWORK.

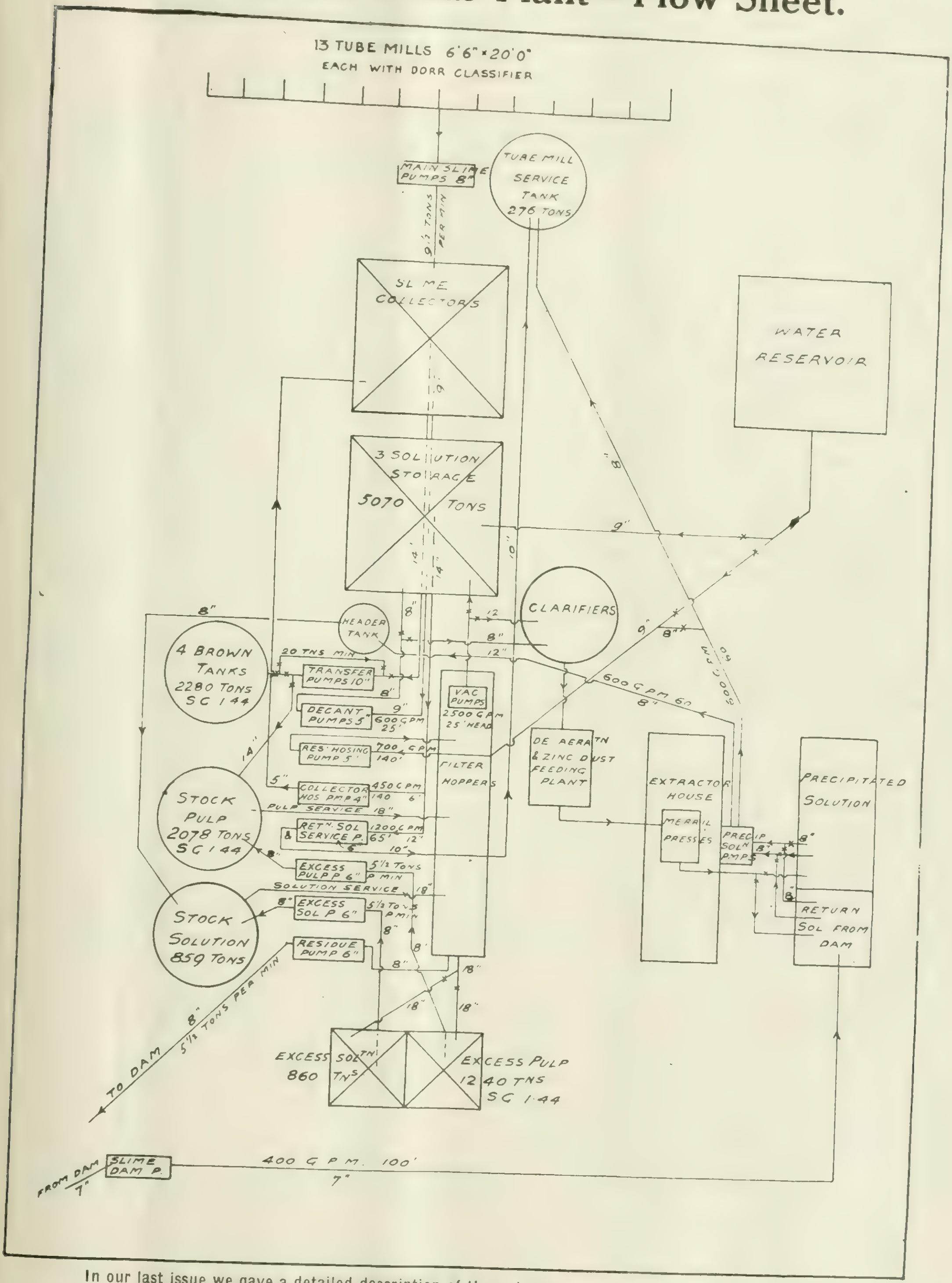
ARMSTRONGS & MAIN, LTD.,

GENERAL AND CONSTRUCTIONAL
.. ENGINEERS, ..

84, Marshall Street,
JOHANNESBURG.

P.O. BOX 5988. **TELEPHONE 5203.**

New State Areas Plant—Flow Sheet.



In our last issue we gave a detailed description of the reduction and treatment plant which is being erected at the New State Areas, and we now give the "flow sheet," which exhibits all details of the equipment and process.

Gold Output : Group Returns.

RESULTS FOR THE STRIKE PERIOD—HEAVY LOSSES BUT MODDERS SHOW PROFIT.

CENTRAL MINING/RAND MINES GROUP.

The following are the results of crushing operations on the mines of the Central Mining/Rand Mines group for the three months ended March 31:—

Company	Tons crushed.	Yield in Fine Gold Ozs.	Estimated Value.	Estimated Loss.
City Deep	55,600	32,162	£149,486	£33,469
Cons. Main Reef ...	42,170	18,867	87,193	41,897
Crown Mines	146,600	53,104	246,312	89,663
Durban Rood. Deep..	27,393	8,091	37,437	39,371
East Rand Prop......	105,200	23,845	110,046	141,550
Ferreira Deep	20,960	5,430	25,227	32,463
Geldenhuis Deep	35,936	9,962	45,687	55,333
Knight Central	34,570	8,063	37,329	14,963
Modder B.	47,000	23,082	106,989	7,203
Modder East	13,750	5,919	27,398	33,084
New Modder	65,000	40,406	186,491	*38,695
Nourse Mines	43,550	13,367	61,279	40,297
Robinson	20,300	6,715	30,959	24,198
Rose Deep*	54,160	14,346	66,480	32,818
Wolhuter	32,055	7,249	33,690	24,532
Village Deep	43,150	13,596	62,946	53,987
Totals and averages..	787.394	284,204	£1,314,949	£626,133

General Note.—Usual particulars will be given in the quarterly reports, which, Wolhuter excepted, will be issued about the middle of the month.

CONSOLIDATED MINES SELECTION GROUP.

The following are the results of operations for the quarter ended March 31:—

	Tons Milled.	Total Costs including Strike Expenses.	Value of Gold Declared	Loss
Brakpan	30,548	£120,456	£69,697	£50,759
Springs	27,690	105,831	48,752	57,079
Totals	58,238	£226,287	£118,449	£107,838

The above results are arrived at by valuing gold per fine oz. as follows: January, 95s. 6d.; February, 92s. 6d.; March, 94s., less estimated realisation charges.

NEW CONSOLIDATED GOLD FIELDS GROUP.

The following are the results of operations for the quarter ended March 31:

	Simmer & Jack.	Robinson Deep.	Sub-Nigel
Tons crushed	59.900	52,300	14,600
Total revenue	£73,778	£85,370	£46,347
Expenditure	£110,442	£131,960	£48,352
Loss	£36.664	£46,590	£2,005
Capital expenditure	£12,318	£7,846	£500

Gold calculated at 95s. 6d. per fine oz. for January, 92s. 6d. for February, and 94s. for March. Expenditure includes all strike and revolution expenditure to date, and in the case of the Robinson Deep includes £4.808 for interest on loans.

TRANSVAAL SILVER AND BASE METALS.

The output of this company for March totalled 174 long tons of lead bullion, containing 18,444 ozs. of fine silver. Operations were affected by the general strike.

BARNATO GROUP.

Mine	Tons Crushed.	Revenue from Gold. £	Total working Costs £
Consolidated Langlaagte	36,000	£51,710	£85,055
Government Areas	115,500	263,579	212,513
Langlaagte Estate	36,806	49,654	92,342
New Primrose	16,000	17,028	36,994
New Unified	12,700	9,937	20,965
Randfontein Central	76,100	105,896	274,326
Van Ryn Deep	45,210	101,620	103,788
Witwatersrand	47,420	52,151	82,721
Totals and averages......	385,736	£651,575	£908,704

Mine.	Working Costs per Ton Milled. Shillings.	Profit or Loss including Sundry Revenue £
Consolidated Langlaagte	47·252	*£32,419
Government Areas	36·799	†52,911
Langlaagte Estate	50·178	*41,741
New Primrose	46,243	*19,774
New Unified	33·015	*10,859
Randfontein Central	72·096	*165,548
Van Ryn Deep	45·914	†1,019
Witwatersrand	34·889	*25,905
Totals and averages	47·115	*£242,316

*Loss. †Profit.

Note.—The above results are arrived at by calculating the gold at £4 15s. 6d. for January, £4 12s. 6d. for February, and £4 14s. for March, per fine ounce. Bad results due to strike.

INVESTORS' DIARY.

Meetings will be held in Johannesburg unless otherwise stated:—

April 28.—Coronation Syndicate.

May 23.—S.A. Land and Exploration Co., 12 noon.

May 29.—West Springs, 11 a.m.; Daggafontein Mines, 11.30; Springs Mines, 12 noon; Brakpan Mines, 2.30 p.m.; Rand Selection Corporation, 3.15 p.m.; New Era Cons., 3.45 p.m.

May 29.—Union Corporation; 11 a.m.

June 3.—Transvaal Coal Corporation, 10.30 a.m.; Anglo-American Corporation, 11 a.m.

May 26.—Modder Deep Levels, 12 noon; Geduld Proprietary Mines, 3 p.m.

June 8.—New Primrose, 11.30 a.m.; New Unified, 11.45 a.m.; Langlaagte Estate, 12 noon; Randfontein Central, 3 p.m.; Randfontein Estates, 3.30 p.m.

June 9.—Consolidated Langlaagte Mines, 10.30 a.m.; Witwatersrand G.M. Co., 10.50 a.m.; New State Areas, 2.40 p.m.; Van Ryn Deep, 3 p.m.; Government Areas, 3.45 p.m.

The annual meeting of Lydenburg Gold Farms, Ltd., is called for May 16. Of the 250,000 shares of 4s. issued it is proposed to pay off 1s. 6d. per share.

Village Deep's Finances.

A YEAR'S RESULTS.

A net profit of £115,271 was made by the Village Deep during 1921. The balance brought forward from 1920 was £16,413, and dividends amounting to £106,067 were distributed. A balance of £143,081 is carried forward. Mr. H. Stuart Martin, the consulting engineer, writes in his annual report as follows:—

The following figures compare the principal features of the last two years' results:—Tons milled: 1920, 555,600; 1921, 581,800. Yield—dwt. per ton: 1920, 6.236; 1921, 6.333. Yield per ton on standard gold basis: 1920, 26s. 2d.; 1921, 26s. 7d. Value of output on the same basis: 1920, £727,549; 1921, £773,630. Additional yield obtained from difference between standard and actual price obtained for gold: 1920, £229,372; 1921, £195,634. Value of above per ton milled: 1920, 8s. 3d.; 1921, 6s. 9d. Total yield per ton milled: 1920, 34s. 5d.; 1921, 33s. 4d. Working costs per ton milled: 1920, 29s. 10d.; 1921, 29s. 5d. Profit per ton milled: 1920, 4s. 7d.; 1921, 3s. 11d. Total working profit: 1920, £128,581; 1921, £112,746. Available ore reserve—tons: 1920, 1,872,300; 1921, 1,544,900. Available ore reserves—value dwt.: 1920, 6.2; 1921, 6.4. The reduction in working profit as compared with the previous year was due entirely to the lower average price realised for gold, the yield on standard basis being 5d. per ton milled higher, and working costs 5d. per ton lower. The influence of the margin between the standard value of gold and the price actually obtained will be realised when it is stated that the standard value of the 184,217 fine ounces recovered was £773,630, whilst the cost of its production was £856,519. The additional price obtained therefore converted a loss of £82,889 into a profit of £112,746. Development operations totalled 20,047 feet, an increase of 3,138 feet over the preceding year. The tonnage of payable ore developed totalled 339,520 of an estimated value of 6.5 dwt. This amount was insufficient to replace the tonnage mined from the ore reserve, but it must be explained that driving on Main Reef has been done to partially develop a further 500,000 tons, which still require valuation, by box-hole raises. The position in this respect is therefore better than the first figures would indicate. The ore reserve re-measured and re-valued at December 31, 1921, was as follows:—Available blocks: Main Reef Leader, 1,462,700 tons, value 6.4 dwt.; South Reef, 82,200, value 6.3 dwt.; total, 1,544,900 tons, value 6.4. Average stoping width: Main Reef Leader, 55 in.; South Reef, 49 in. Shaft and other pillars: Main Reef Leader, 542,800 tons, value 6.1. Total: Main Reef Leader, 2,005,500 tons, value 6.3; South Reef, 82,200 tons, value 6.3; total, 2,087,700 tons, value 6.3. Compared with the preceding year, the available reserve is 327,400 tons less in quantity for reasons stated above, whilst the value is .2 dwt. higher, due to the slightly lower stoping width. The available reserve is made up of 74 per cent. between a value of 5 and 7 dwt., and 26 per cent. of a value over 7 dwt. It will be clear from the constitution of the ore reserve and its low average value that, with gold at its normal price, it will be necessary to effect drastic economies to enable the mine to earn any profit. To bring this about by technical means is naturally very difficult when consideration is given to the fact that the mine workings have now reached a total depth from the surfce of 6,134 feet. The extensive use of jackhammers in stoping has enabled the width to be reduced, and made the support of the hanging wall somewhat less difficult. Any further improvement in this direction can, however, only be fractional, and cannot have any important bearing on the main issue. It is evident, therefore, than the desired object can only be attained by a substantial reduction in the bill for wages and stores, together with a general reorganisation of underground working arrangements.

Mr. J. White, the Manager, writes as follows, *inter alia*: Owing to the great depths at which the mine is now working and the excessive pressure resulting therefrom, it has been necessary to introduce Jackhammers exclusively for stoping operations, and eliminate Reciprocating Machines, which, until recently, we used for this work. The number of Jackhammers now employed is 258. The total tons crushed was 581,800, an increase of 26,200 tons as compared with the previous year. The cost of development for the year was £91,973 13s. 9d., which is equivalent to 3s. 1.9d. per ton milled. The main incline shaft is now being sunk to the 33rd level, and has reached a vertical depth of 6,134 feet below the surface. The shaft will not be sunk below this level, and work has already been commenced to provide for the sinking of two subsidiary shafts from the 32nd level. These will continue down into the most southern part of the area held by this Company, and the ore will be transferred from the two subsidiaries into the main incline shaft. The ore chutes for this purpose are already in hand. At the 32nd level a new pumping station must be provided immediately, which will deal with all water which the mine is making below the 18th level. On the completion of this station the pumps at the 24th and 28th levels will be withdrawn. Reference has already been made to the replacement of Reciprocating Machines by Jackhammers in sufficient numbers to carry out the entire stoping operations of the mine, and by the end of the year this transition was practically completed. The effect of this change has already been felt. The support of the workings has been rendered less difficult, owing to the reduced shattering of the hanging wall, and, in addition, it has been possible to reduce stoping widths, which has not only made the support of the hanging less difficult, but has made cleaner stoping possible, thus improving the grade of ore mined. At the great depths at which mining is now carried on, the elimination of waste, as far as possible, in stoping is of the greatest importance to the future operations in this mine. During the month of February a strike took place of the underground white employees which lasted for eight days. I have pleasure in recording that during this period the underground staff successfully carried on operations with the assistance of the native leading hands, with the result that no loss was sustained on account of the strike.

A New British Steel.

One of the most fascinating phases of the steel industry is the development of special alloys in which chromium and nickel are employed. Alloys of this kind have come into fairly general use for motor-car and aircraft work on account of their great strength and toughness, but they are liable to become brittle after tempering. This tendency can be corrected by quenching—that is to say, rapidly cooling—the metal in either oil or water. Unfortunately, such quenching may cause distortion of the material, which can be straightened out only by mechanical means which strain the metal. In order to remedy this condition of affairs a British firm instituted a special research, which has led to the production of a new alloy which has even better mechanical properties than the ordinary alloys, and is not liable to brittleness. It does not, moreover, require any special treatment.

J. RAMSAY-ANDERSON, B.Sc., Agriculture, 16 years' practical experience of farming and planting in Africa. 8 years as Advisor and Director of Agriculture, Colonial Governments. Is open to report, advise and value properties; personal supervision; advice given to intending settlers, fees moderate.

14, Palace Buildings, Pritchard Street,
JOHANNESBURG.

G.E.C. Magneto Mining Telephones

PROVIDE the most up-to-date, safest and most efficient means of signalling and communication between various parts of a mine.

Embody: Four Magnet Tropical Generators, Long Distance Transmitters, Double Pole "Bell" Receiver.

Flame-Proof & Watertight.

Designed to meet all mining requirements and to comply with Home Office Regulations

The British General Electric Co. Ltd.

REGD TRADE MARK

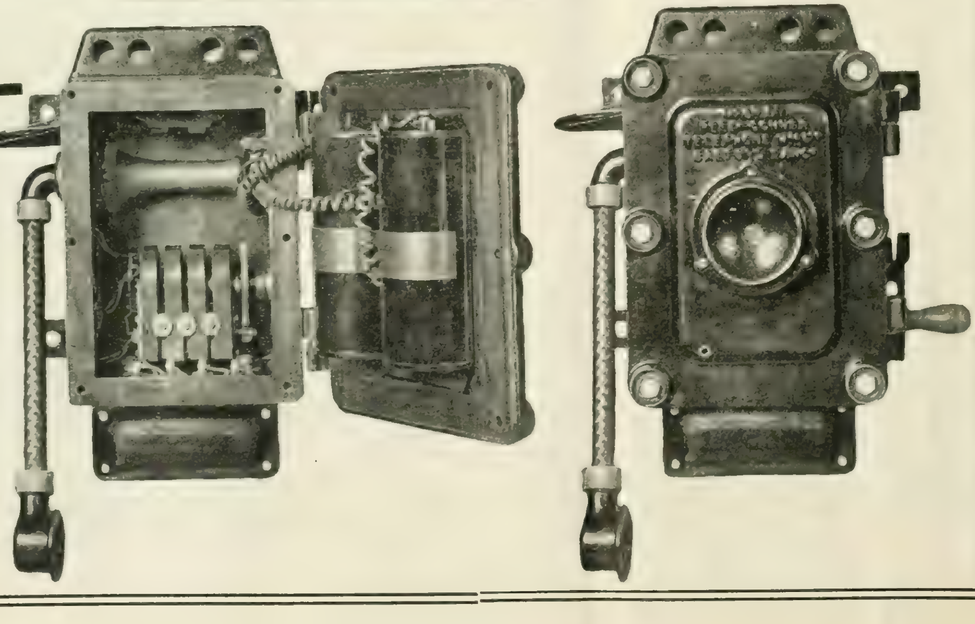
Representing THE GENERAL ELECTRIC CO., LTD., of England

Head Office:—
Johannesburg
Corner Loveday and Anderson Streets
Box 2406 Phone 4242 3 Tel.: "Current"

Capetown
83 89, Castle St.
Box ——— 1327
Phone ——— 1401 2
Tel.—"Induction"

Durban
56, Field Street
Box ——— 922
Phone ——— 1793
Tel.: — "Ampere"

Agents at:—Port Elizabeth, East London, Maritzburg, Bulawayo, Delagoa Bay, Beira, Dar-es-Salam, Tanga, Zanzibar, Mombasa, Nairobi, Uganda, Etc.



Modder "B" Prospects.

DEVELOPMENT RESULTS.

IMPROVED ORE RESERVES.

Out of its net profit of £1,003,969 earned in 1921, the Modder B distributed £665,000 in dividends, leaving a balance of £308,485 to be carried forward. In the course of his annual report Mr. H. Stuart Martin writes:—

Comparative figures of the leading features for the last two years are as follows:—Tons milled: 1920, 627,700, 1921, 687,500. Yield per ton milled, dwt.: 1920, 9.948; 1921, 10.527. Yield per ton milled at standard price of gold: 1920, 41s. 9d.; 1921, 44s. 3d. Working costs per ton milled: 1920: 26s. 1d.; 1921, 26s. Working profit per ton milled at standard price of gold: 1920, 15s. 8d.; 1921, 18s. 3d. Working profit at standard price of gold: 1920, £492,984; 1921, £628,032. Revenue derived from price of gold above standard (per ton milled): 1920, 13s. 7d.; 1921, 11s. 3d. Total working profit realised: 1920, £918,423; 1921, £1,012,729. Total working profit realised (per ton milled): 1920, 29s. 3d.; 1921, 29s. 6d. Ore reserve, tons: 1920, 3,006,600; 1921, 2,773,300. Ore reserve value, dwts.: 1920, 8.6; 1921, 9.6.

The principal features in the above comparison are: An increase in tonnage milled of 59,800 tons; an increase in yield of .579 dwt. per ton, equivalent to 2s. 6d. per ton on the standard gold basis and in total £210,848, and a net increase in total working profit, allowing for the actual price realised for gold, of £94,306. The average price realised per fine ounce for 1921 was £5.27 as compared with £5.56 in 1920. The official crushing capacity of the mine has been increased to 64,000 tons per month by the addition of a tube mill and plates. The improved yield was due chiefly to the fact that the results from stoping operations were more favourable than anticipated from the previous year's valuation of the ore reserve—the extent to which overmining took place being practically negligible. It will be noted from the manager's report that special attention continues to be given to the rejection of valueless development rock, and a great deal of waste is kept in the mine. Development operations were increased, particularly in the second half of the year, when the south-eastern shaft came into operation, the average footage for that period being 2,390 feet per month. The estimated tonnage of payable ore developed for the year amounted to 683,840 tons of an estimated value of 9 dwts. per ton; of this 253,740 tons are situated in the eastern, 73,940 in the central, and 356,160 tons in the western area. The result is scarcely representative of the large footage accomplished, but as much of this has been in the nature of preliminary work, more productive results should be obtained during the current year, particularly as rapid progress can also now be made from the south-western shaft.

The ore reserve, re-estimated and re-valued at 31st December, 1921, was as follows:—2,773,300 tons valued at 9.6 dwts. over 63 inches. Compared with the previous year, there is a reduction in tonnage of 233,300 tons, whilst the average value has improved 1 dwt. per ton. The reduction in quantity is due to the elimination of certain low grade blocks, whilst the improvement in quality was due to the value of the ore developed, to general adjustments in the ore reserve valuation, justified by increased information now available, together with the elimination of the low grade blocks mentioned above. Sinking, together with equipment on a development basis, of the south-eastern shaft was completed. Development operations on reef commenced in July, and the total amount of footage accomplished during the year was 2,880 feet, of which 1,745 feet disclosed reef. Although the character of the formation was far from discouraging, the average reef width and values so far disclosed in the 6th and 7th level drives were not payable. In the south-eastern corner of the mine, the Geduld Proprietary Mines, Ltd., again carried out exploratory work on behalf of your company. A heading was advanced 320 feet in a southerly direction, disclosing a fine reef body averaging 893 inch-dwts. in value. Arrangements are in hand for effecting a rapid connection between the south-eastern shaft and these workings. In the north-eastern section of the mine a considerable amount of development work was done. Owing to the presence of faults and the flatness of the strata, much of the work has been of a preliminary nature. The total footage accomplished during the year in this section was 5,926 feet, of which 2,950 feet disclosed reef, the linear payable footage disclosed, viz., 44.7 per cent., being 1,310 feet averaging 412 inch-dwts. in value. During the year the south western shaft was sunk 589 feet to its final depth of 1,769 feet, and has been connected up to that portion of the south-western area of the mine already developed. This shaft is now completely equipped to handle a considerable tonnage, and its connection to the central sorting station by a mechanically operated haulage is completed. The expenditure on sinking and equipping this shaft during the year totalled £57,489, and a sum of £34,548 was expended on ore bins and the haulage road. A study of the plan accompanying this report will make it clear that the problem of dealing with ore from the south-western area is now much simplified, and the cost of ore transport will be cheapened; in addition, future development in the deeper portion of the mine will be greatly facilitated. Apart from the items of expenditure already enumerated, the remaining expenditure was for the purpose of placing the mine in a more independent position as regards water supply, and for additional housing for employees. The commitments on capital account for the current year are comparatively small as compared with the two past years; approximately £11,000 remaining to be expended on work yet to be completed. A light railway, connecting the two southern shafts with the main compound, store and railway siding, is recommended, and further expenditure will no doubt be required in connection with the handling of mine water from the deeper workings. Apart from the fact that the price obtainable for gold is not likely to be so high as during 1921, the general outlook for the mine during the current year is in every way satisfactory.

Rhodesia February Mineral Output.

The summary of mineral production of Rhodesia for February, 1922, is as follows:—

				Value.
Gold	fine oz.	51,421.60		a £304,488
Silver	fine oz.	14,403.62		2,564
Coal (raised 36,521 tons)			(sales)	11,162
Do. (used for coke)				5,006
Copper (blister)	tons	283.98		18,605
Chrome ore		Nil.		Nil.
Asbestos	tons	380.26		b178,732
Arsenic	tons	45.80		1,011
Mica	lbs.	1,958		245
Diamonds	carats	9,875		76
Total				£521,889

a Includes £78,860 premium on gold. b Includes £169,154 adjustment on sales asbestos, April, 1920, to Dec., 1921.

MINES DEPT. EXAMS.
CERTIFICATES AWARDED INSTITUTE.

MANAGERS' EXAMS., September, 1921, January, 1922.

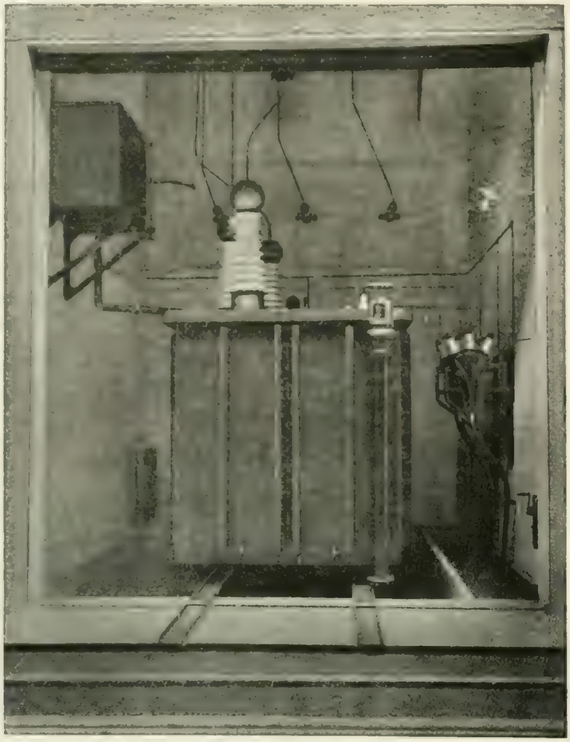
We obtained 15 out of a total 22 certificates awarded in South Africa

	Metal	Coal	Totals
Ours	9	6	15
Rest of S.A.	4	3	7
Total for S.A.			22

OVERSEERS' CERTIFICATES (Metal).
So far as we know we have only had 6 failures during 1921, and secured two-thirds of the certificates issued in S.A. during the past two years.

TUITION (Metal or Coal) by class, correspondence or privately

Mining Institute (Prof. Yates),
St. James' Mansions, Eloff St. Johannesburg



110,000 VOLT
TRANSMISSION

A TYPICAL
SIEMENS - SCHUCKERT
TRANSFORMER CUBICLE.

S-S TRANSFORMERS MAKE GOOD THE OPERATING ENGINEER'S REPUTATION FOR CONTINUITY OF SUPPLY.

Branch Office for South Africa:
C. KLEUDGEN, LTD.,
Corner of Loveday and Marshall Streets,
JOHANNESBURG.
P.O. Box 1164 **Telephone Central 5435**
Telegrams: "KLEUDCO."

Kinghorn
Metallic Valves

SOLE AGENTS:
GEO. CRADOCK
—AND CO. (S.A.), LTD.—
75-77, CULLINAN
BUILDINGS.

P.O. Box 316. Telephone 539.
Tel. Add.: "ROPES."
JOHANNESBURG.

BIN AND HOPPER GATES

¶ Robins Gates are made in many types and sizes, most of which are standardised.

¶ Among these are: Single and double cut-off gates, rack-and-pinion gates, under-cut gates, radial finger gates.

¶ In designing, special thought is given to the characteristics of the material to be handled, and to convenience and ease of manipulation.

¶ Method of operation is carefully suited to the need, whether by hand-lever, crank, chain, air, or electricity.

¶ Structural steel or cast iron are used, depending on the requirements.

Robins Conveyors (S.A.), Ltd.
(Head Office: Robins Conveying Belt Co., New York, U.S.A.)

The South African Mining and Engineering Journal.

HEAD OFFICE: 176-180 Stock Exchange Buildings (2nd Floor), Fox Street, JOHANNESBURG, Union of South Africa.

Telephone **913.** P.O. Boxes **963** and **4573.**

Cables and Telegraphic Address: "MINING JOURNAL."

ANNUAL SUBSCRIPTION RATES: Oversea, £2; Union of South Africa and Rhodesia, £1 10s.; Local Delivery (Town only), £1 6s., payable in advance.

AGENTS FOR GREAT BRITAIN AND AMERICA: Argus South African Newspapers, Ltd., Byron House, 82-85, Fleet Street, London, E.C. 4.

Copies of this Journal are obtainable at all Branches and Agencies of the Central News Agency, Ltd., at all News Agents and Railway Bookstalls throughout South Africa, and at the London Agency as above.

CONTENTS.

PAGE
Mineral Development "Up North" 1085
Flow Sheet (Diagram New State Plant) 1089
Gold Output: Group Returns 1090
Village Deep Finances 1091
Editorial:
The Coronation Syndicate and Luipaards Vlei No. 10 1095
The Business Outlook 1096
Modder B. Prospects 1093
Rose Deep Results 1099
Latest Industrial Census 1099
Geneva Conference 1100
Finance and Information for Investors 1101
The Week in the Sharemarket 1103
Trade and Industries Section: ... ...
The Week in the Mining Material and Engineering Trades 1105
Company Meetings: The Coronation Syndicate 1109
Supplement: ... ...
History of South African Mining Explosives .... i.
The Modderfontein Factory .... iii.
The Umbogintwini Factory .... vi.
The Delmore Group of Industries .... ix.
Fertilisers: What South African Soils Need .... xii.
The "Capex" Group of Industries .... xiv.
Chemicals, Fertilisers, Soap and Candle Factories in the Union .... xiii.
Explosives Manufactured: Progressive Totals .... xvii.

EDITORIAL.

THE CORONATION SYNDICATE AND LUIPAARDSVLEI No. 10.

Has the Rand been opened up along the full lateral extent of its profitable length? Are there new propositions still to be exploited, or is Randfontein the *Ultima Thule* out West of the pay area of this field, and Geduld and Springs the boundary of legitimate Main Reef series of payable grade on the East? These and similar questions are very obviously of the greatest moment to all of us who live, directly or indirectly, upon the business of producing gold at a profit in the Transvaal. Most people at some time or other during recent years have asked themselves such questions, and have not been able to obtain a satisfactory answer. There are, of course, many complex variables and not easily soluble equations, some of which, in fact, cannot be written of except in very nebulous terms, which must determine the answer to this question, and it is not pretended that in this article anything approaching a satisfying answer can or will be given. But it may be pointed out that there are three new Far East Rand lease areas for which the Government will doubtless call for tenders when conditions are propitious, and there are also several other propositions on the Eastern and Western flanks of the Witwatersrand which may well enhance the productive reputation of the Witwatersrand and prolong its life, given a reasonable rate of working expenditure and a return of generally attractive conditions for the investment of capital. Amongst such properties the huge area controlled by the Coronation Syndicate on the farm Luipaardsvlei No. 10 calls for particular mention. This property lies to the south of Randfontein, between the great West Rand constellation of properties and the Western Rand Estates, where such encouraging borehole results were secured some years ago. The farm Luipaardsvlei No. 10, despite its favourable geographical and geological position, which clearly made it a potential gold producer of immense importance, lay fallow for many years. Boring operations around the south-eastern corner of the property were undertaken some years ago, but the holes were so located that they did not intersect in normal sequence the Reef series, which has been penetrated in the drill-holes put down under the present aegis.

About three years ago Messrs. J. M. Calderwood and J. A. Thorburn began to investigate the possibilities of Luipaardsvlei, and shortly afterwards located a borehole. This first borehole gave useful data, but did not intersect the Reef in its normal section. The directors and technical advisers of the syndicate, however, persevered, and in borehole B the West Reef of the Randfontein series was encountered at a depth of only 770 feet, giving a value of 10½ dwt. over a stoping width of 4 feet. In borehole C the Randfontein Leader was encountered at 832 feet, and this gave an assay value of an ounce and a half over 4 feet. The fourth or D borehole has now reached a depth which is nearly on the horizon of the Reef, and other important exploratory results may therefore be expected in the near future. The mining area accruing to the syndicate under its mynpacht and discoverers' claims rights will constitute an immense proposition—one of certainly not less than one thousand claims, or as big a mining area as that of the City Deep. In the Randfontein district the angle of inclination of the Reef is high, and this means a relatively large tonnage per claim. It would be quite futile at this juncture to attempt any definite forecasts at the reef tonnage per claim likely to be established by actual development, or to attempt any predictions as to working results on Luipaardsvlei, but it is permissible to point out that this proposition, situated as it is between Randfontein on the one side and Pullingers on the other with its large area, with finances readjusted on a satisfactory basis, and with highly satisfactory borehole results, would already be ranking exceedingly high in the public estimate were it only situated in the favourite area of the Far East Rand. As it is, however, the proposition is considered to be a very attractive one by those who have persevered with its development, and who have carefully considered the significance of the borehole data secured. The company has now put its financial house in a satisfactory condition, and is possessed of £100,000 in cash in terms of the resolutions passed at the extraordinary meeting of last week, the proceedings at which are fully reported elsewhere in this issue. Moreover, as Mr. Sonn then pointed out, should the shares under option be taken up, the company's funds will be augmented by £300,000. This presupposes the continued disclosure of encouraging results, and we can see no reason for believing that the excellent values obtained by boring will not be confirmed by subsequent development. In our opinion the farm Luipaardsvlei No. 10 may very well represent a large and immensely valuable addition to our goldfield, and we should like to join with those who bestowed a well-deserved tribute of praise upon the directors, and particularly upon Mr. Harry Graumann, M.L.A., for the very fair deal they have given shareholders in the face of not inconsiderable difficulties.

THE BUSINESS OUTLOOK.

The outgoing President of the Chamber of Commerce, Mr. L. Blane, was called upon to deliver his valedictory address at an [illegible] [illegible] last week. The [illegible] [illegible] [illegible] at the moment of an [illegible] of anything but a rather depressing review of affairs, and the trade figures for 1921 quoted by Mr. Blane added little to the cheerfulness of the occasion. Mr. Blane's recital of the import and export trade totals last year as compared with the corresponding figures for 1920 was a tale of unrelieved gloom, and the supplementary returns of the banks and railways were truly in keeping with them. For obvious reasons, the figures for the first quarter of the current year offered no ray of hope, and the outgoing President of the Chamber, therefore, contented himself with a statement of the facts, without recourse to prophecy. Both Sir Ernest Chappel, who seconded the address, and the new President of the Chamber, Mr. W. A .Martin, were in more optimistic mood, and both succeeded in putting a better face on the position. As the Prime Minister at Capetown during the week asseverated, South Africa now seems to be through the worst of its troubles, and business must now be on the mend. Sir Ernest Chappel, whose distinguished connection with both mining and commerce well entitles him to speak with authority, voiced the Rand business man's view that the mines will now deal fairly, not to say generously, with their men. Labour has put itself in a false and wrong position, and Sir Ernest advises the Industry not to punish too severely the victims of the recent folly. Mr. W. A. Martin, the new President, takes a strong and clear-cut line of thought in regard to recent events. He sees that costs must come down all round, and that our economic salvation lies in that direction. He is, however, full of confidence that the corner has now been turned, and his cheerfulness is just the right spirit for a new chairman of so representative a Rand body of business men to begin the new commercial year with. South Africa is all right, and the Rand is all right if it is given a fair chance to work out its destiny on business lines. Firmly do we hope with these experienced commercial leaders that the bitter lessons of the immediate past may not have been learned in vain, and that the industry and the country are on the eve of a period of real progress and development.

Notes & News.

The Rand Show.

Everything points to the Witwatersrand Show of 1922 being an unqualified success. The exhibits will be superior to those seen at any previous Show. The accommodation has been improved, and visitors to the various sections will be able to see the horses, cattle and other stock to their best advantage. It was thought that the attendance might fall short of that of other years, but inquiries made go to show that the principal hotels are fully booked up for Show Week. An almost continuous line of carts and trolleys arrive daily at Milner Park. They carry ploughs and farming implements of all descriptions. In the space allotted to machinery, agents and their assistants are busy erecting windmills, water borers and engines. Some of the machines on show are if a type that has not yet been exhibited. In the industrial section a number of the benches are already occupied, and many novel and interesting devices will be seen. Prospective house builders will have an opportunity of selecting tiles, roofing, timber and other necessities. Very complete exhibits of cooking ranges and household necessities are being arranged. We hope in our next issue to describe some of the more important exhibits in detail.

* * *

Mining Industry Board.

The Mining Industry Board proposes to commence its sittings in Johannesburg on Monday, April 24, at the New Law Courts. Steps have already been initiated in various quarters concerned regarding the preparation of statements for submission to the Board and the giving of evidence.

New Plant for Namaqua Copper.

The Comrie Castle arrived from England on Tuesday evening of last week, and left again on Thursday night for Capetown, having discharged about 400 tons of mining machinery for the Namaqua Copper Co. The company is erecting a new plant at a cost of over £60,000, which will enable it to manufacture and export bar copper in future.

* * *

Newcastle Steel and Iron Works.

At a meeting of the Newcastle Town Council, held on Wednesday of last week, the Town Clerk read a letter from the local Chamber of Commerce stating that a meeting was held on April 3 to discuss the position of the Newcastle Steel and Iron Works, and that the Chamber thought it advisable to bring outside pressure to bear upon the Government. The following resolution was passed by the Chamber of Commerce: "That this Chamber recommends to the Town Council that two delegates proceed to Capetown to interview the Government on this important matter, which is vital to the interests of Newcastle and district." The Chamber of Commerce, it is reported, has appointed two delegates to visit the Dundee and Durban Chambers of Commerce, with the hope that they may be so interested as to appoint delegates themselves and, in conjunction with official representatives of Newcastle, proceed in a body as a deputation from the Province of Natal and lay the whole matter before the Ministry. The Mayor (Mr. Frank Greaves, jun.) said that this letter was the first he had heard of the meeting of the Chamber of Commerce, and he thought that a matter of urgency such as this should have been made known to him earlier. After discussion it was unanimously resolved that two delegates from the Council be sent.

* * *

Mozambique Convention.

The Union Government's denunciation of the Mozambique Convention was explained in the House of Assembly the other day by General Smuts. Invited by Mr. Greenacre to make a statement, the Prime Minister said that the Government had denounced the Convention as from April 1 next year. "Twelve months' notice," he told the House, "had to be given for the denunciation of the Convention existing between the Union and Mozambique, and the Union Government had given that notice. I may add that some time ago the Mozambique Government—the Administration at Mozambique—informed the Union Government that they were dissatisfied with the Mozambique Convention, which they considered to be no longer applicable to the circumstances to-day existing as between the two countries. They did not denounce the Convention, but they informed us that they were going to do so. Before actually taking the step of denouncing the Convention they intended to have a conference between the two countries. That conference was welcomed by the Union Government, and was to have been held last month. Owing to one reason and another, however, the conference did not come off. It was to have taken place in Capetown, the Union Government having invited the Mozambique delegates here." Continuing, General Smuts said that under the circumstances, as the Union Government was just as much dissatisfied with the existing Convention, they came to the conclusion that the proper course in the interests of the Union was to take the step themselves and give notice of the denunciation of the Convention. This had been done. The notice had to be given before the end of March in order to become operative from April 1 next year. At the same time, whilst giving this notice of denunciation, the Union Government has informed the Portuguese Government that in giving that notice they are not receding from the idea of a conference. They welcome a conference, and they renew the invitation to the Portuguese representatives to visit Capetown in order that the terms of a new Convention might be fully discussed. "I have every reason to think that that will be the course that will be pursued by the Portuguese Government, and that ultimately a conference will take place in Capetown which will discuss the terms of the new Conventon to replace the terms of the old Convention which will expire in April," said the Prime Minister.

SPECIAL EXPLOSIVES AND CHEMICAL WORKS SUPPLEMENT.

History of South African Mining Explosives.

THE OBNOXIOUS DYNAMITE MONOPOLY—CONCESSIONS AND "RINGS"—COMPETITION FROM THE CAPE—ADVENT OF KYNOCH'S AND NOBEL INDUSTRIES—A TANGLED SKEIN!

The student of Rand mining economics who sets out to sketch the history of its supply of explosives is met at the outset by a plethora of data on the subject up to the Anglo-Boer War, accompanied by a marked scarcity of available facts for the period since then. Volumes might be written on the much execrated dynamite monopoly of the Kruger régime, but after its passing the explosive trade of South Africa became subject, not entirely, but in a greater degree, to ordinary business competition; and its course through the usual channels of private negotiation and agreement becomes more difficult to ascertain. In the following sketch, however, the main facts are elucidated, and the tortuous history of the monopolies, concessions, "rings," and agreements to which the trade has been subjected is outlined.

The history of the explosives trade of South Africa divides itself naturally into three periods. First, there were the bad old days of the dynamite monopoly under the Kruger *régime;* then the second chapter, when Modderfontein divided up the trade with the De Beers factory started at Somerset West in 1902, and the third period of tripartite division of the trade between Modderfontein, the Cape Explosives, and Kynoch's, or as it is now known, Nobel's Industries factory at Umbogintwini on the Natal coast.

The Dyanmite Monopoly.

The history of the dynamite trade in the days of the Republic is, of course, part and parcel of the political history of those times. The Industrial Commission of 1897 spent months examining witnesses on the subject, and as a result published a voluminous report which set out the facts very bluntly and dispassionately. Before that the Volksraad had appointed a Dynamite Commission that had strongly advised the Kruger Government to cancel the concession. The Industrial Commission's report made out an unanswerable case in favour of abolishing the iniquitous monopoly whose owners were shown to have fooled the Government and bled the mines, and it advocated free trade in explosives. The nominal concessionaires were a company known as the South African Explosives Company, Ltd.—a subsidiary of Nobel's Trust—which had a sort of dummy factory at Modderfontein, where a certain quantity of explosives were "assembled" as a blind for the importation of the finished article. Under the terms of the concession, the product was sold at an exhorbitant price to the enrichment of the concessionaires and an army of satalites, and the whole business resolved itself into a scandal of the first magnitude. The following passages from the report of the Industrial Commission but feebly express the obliquy in which the monopoly was held:—"It has, we consider (says the report), been clearly proved that the price paid by the mines for explosives of all kinds is unreasonably high, having due regard to original cost and expenses of delivery in the South African Republic, and in our opinion a considerable reduction should be made. In making recommendations with this object in view, it must be stated, at the outset, that the main difficulty in dealing with the question arises from the existence of the contract, by means of which the monopolists are able to maintain the high price, in spite of the fact that the manufactured article is mostly obtained by them in Europe at a very much lower cost. Consequently, the advantages which the Government intended to confer upon the country by establishing a new industry here, have not been realised, whilst the monopoly has proved a serious burden on the mining industry. That the principal explosives used here (blasting gelatine and, to a small extent, dynamite) can be purchased in Europe, and delivered here at a price far below the present cost to the mines, has been proved to us by the evidence of many witnesses competent to speak on the subject, and when we bear in mind that the excess charge of 40s. to 45s. per case does not benefit the State, but serves to enrich individuals for the most part resident in Europe, the injustice of such a tax on the staple industry becomes more apparent, and demands immediate removal. It has been proved that the South African Republic is one of the largest, if not the largest, consumer of explosives in the world, and, according to the rule of commerce in such cases, it is reasonable to suppose that the most advantageous terms would be secured for so large a consumer. This, no doubt, would be the case were it not for the monopoly now in the hands of the South African Explosives Company, whereby they and their friends make enormous profits at the expense of the mining industry. These profits have been estimated by the Volksraad Dynamite Commission at no less than £580,000 for the years 1897 and 1898, being £2 per case on 290,000 cases, the number which it is estimated would have to be imported to meet the demands for those years. It is thus clear that the hope of establishing a factory capable of supplying the requirements of the mines, within a reasonable time, from the products of the country, is far from being realised."

Despite the outcry caused by the finding of the two Commissions on this subject, no material relief appears to have been afforded to the industry until it became possible to make a fresh start after the cessation of hostilities. It was not till 1902 that the long-drawn-out struggle of the mines against the monopoly came to an end.

Nobel's Change Front.

Up to the close of the war, the dynamite monopoly was avowedly a foreign organisation—Nobel's Trust owned and controlled the Modderfontein factory. After the war Nobel's still owned and controlled Modderfontein, but it was no longer a foreign organisation, at least in name. The title of the old company—Eerste Fabrieken voor Ontplofbare Stoffen Beprekt—owned and controlled by Nobel's, domiciled in and directed from Hamburg, was changed to the British South Africa Explosives Company, Ltd., with a British Board directed from Glasgow. The change was at the time described by Sir Percy Fitzpatrick as being the same appeal to racial prejudice which Nobel's people made with such good effect in former times. Though free trade in explosives had been established and Nobel's ring broken as far as South Africa was concerned, the mines were under no illusions about the need for vigilance if it were to be permanently and successfully fought. Sir Percy Fitzpatrick, in a public speech at the time, said: "Our caution is warranted by experience, and we must be permitted to say without offence to anyone in particular, that we really do not know who is in the ring and who is not. We have had before to-day experience of those who indignantly protested against the charge of being in the ring; but the very astute gentlemen who direct that organisation do not deal on stereotyped lines, and whilst some are in it by agreement and for profit, others are out of it by agreement and for profit, and we know well the practice of marking off the map of the world into provinces and allotting to each his area within which there shall be by agreement no competition from the others. The South African area may be an open area or not, but the fact that so many of the apparently-competing manufacturers have cut up the rest of the globe into reserves, entitles us to exercise some discretion in deciding what to do here. If a genuine local factory be maintained here, I am quite confident that it will be able to secure, and will secure, a liberal share of the trade, and if it should employ British workpeople—Dutch or English—the measure of support would be more liberal still." Naturally the B.S.A. Explosives people made it their immediate business to see that "a genuine local factory" was established, and the completion of the equipment of the magnificent works at Modderfontein was the result.

Enter De Beers!

With the advent of the so-called era of free trade in explosives, De Beers started an explosive factory at Somerset West on the shores of False Bay. The new Cape works soon began to play an important part in the trade, and from about the beginning of 1903 it became a formidable competitor with Modderfontein. The Cape Explosives Co., Ltd.—the name of the new venture—was established by De Beers with the assistance and co-operation of the leading mining houses of the Rand with the object of keeping down prices and acting as a check on those charged by Nobel's, who controlled prices in Europe and might again try to put them up in the Transvaal. An arrangement on a co-operative basis was made between the mines of the Rand and De Beers, whereby the latter supplied dynamite for a fixed term of years at actual first cost of production, with 6 per cent. interest on capital and 6 per cent. for amortisation. This arrangement had the effect of dividing up the orders in almost equal shares between Modderfontein and Somerset West, the former, naturally, having to reduce its price to a competitive level. A few orders still found their way to Europe, to Kynoch's, and to German factories, but a high duty on imported explosives made it impossible for the last-named to compete.

Kynoch's Intervene.

Matters remained like this for some years, the Cape and Modderfontein factories satisfying all the needs of the mining industry at satisfactory prices. Towards the end of 1907, however, it became an open secret that delicate negotiations were in progress between the two South African dynamite factories on the one hand, and the mines on the other, and that the Transvaal Government had manifested interest and taken a hand in the game. The position was further complicated by the appearance of a new would-be supplier—Kynoch's—on the scene. The correspondence published at the time between the Government and the President of the Chamber of Mines made the position clear, so far, that is, as the complexities of the situation permitted it to be made clear. It appeared that before the original contracts ran out—about 1909—negotiations began between the two factories interested, with the object of again dividing future orders between them. At that stage the Government stepped in and, after considering the history and explanation of the situation as submitted by the President of the Chamber of Mines, laid down its wishes in the matter. These were (1) that no monopoly, trust or combine should be established; (2) that the cost of explosives should be kept down as much as possible; and (3) that Nobel's factory at Modderfontein should be supported. Of course, the mines had no objection to these recommendations; indeed, they fitted in with the industry's desire to maintain free trade in explosives. The Chamber of Mines, however, strongly defended the existence of the De Beers factory, because, no doubt, the measure of control exercised by the mining houses in its management had hitherto proved an effective safeguard against any raising of prices, and would continue to do so. The Chamber proceeded to maintain that the object with which the mining houses had acquired their interest in that factory was to keep prices down; they declared they did not desire or try to leave Modderfontein "out in the cold"; they merely used the Cape factory as a check on Nobel's. Their endeavours were directed towards keeping down prices of explosives, while enabling the two establishments that had sunk capital in the business of providing South African dynamite to the mines to pay at least interest and amortisation charges on that capital. The arguments used in favour of Modderfontein were, briefly, that it was a genuine local industry, that it was established before the factory at the Cape, and that its products were at least equal to those of the Cape factory. The fight for the new contracts was brought to a head when Kynoch's of Birmingham announced that they were setting up a factory on the Natal coast and that they would supply explosives at prices lower than those prevailing on the Rand. Naturally, the two existing factories met this by an offer to reduce their prices also; and the whole matter resolved itself into one of negotiation among the three competitors and the mines, with the Government in an attitude of benevolent neutrality.

A Compromise.

Early in 1908 the new contracts were arranged. Kynoch's secured a fair share of the Rand trade, partly at the expense of Modderfontein and, to a less extent, at the expense of the Cape factory. Kynoch's started to send explosives to the Rand in January, 1909, and Natal rejoiced in the establishment of another important addition, at Umbogintwini, to its industries. Some time later it transpired from the speech of Lord Ribblesdale, the Chairman of the B.S.A. Explosives Co., Ltd., at the annual meeting of that enterprise, that the Modderfontein people regarded themselves as unfairly treated in the matter, and there were threats of closing down that factory, which, however, did not materialise.

The War and Some of its Effects.

From the entry of Kynoch's to the outbreak of the Great War the explosive trade of South Africa ran its course without incident. The Great War, with its sudden and insistent demand for high explosives, was soon reflected in various ways in the South African industry. The General Manager of the Cape Explosive Works, Mr. W. R. Quinan, put his services at the disposal of the British Government, and was entrusted with the expenditure of millions on the erection and equipment of hurriedly planned high explosive factories. That he carried out his herculean task to the entire satisfaction of the British Government is a matter of history, and largely through his efforts the British armies were second to none towards the close of hostilities in their supplies of this essential weapon of modern warfare. Kynoch's Natal factory also helped materially with the making of explosives; and all three South African factories, though hard put to it to obtain supplies of the essential glycerine, succeeded in maintaining the requisite explosives for the gold and coal mining industries. At the request of the Imperial Government, efforts were made to reduce as much as possible the quantity of glycerine used, and one result of these efforts was the disastrous attempt—from the financial point of view—to introduce a new explosive named "Sengite." The mines undertook to bear the monetary loss on this material, which amounted to upwards of £180,000.

British Explosives Combine.

But the most important effect of the War on the industry was the elimination of German interests from the British explosives trade generally. This led to the formation of a big explosives combine of purely British interests, known first as Explosives Trades, Ltd., with a capital of £14,000,000, which took over the control of both the B.S.A. Company at Modderfontein and Kynoch's at Umbogintwini. A little later the name of this great undertaking was changed to Nobel's Industries, Ltd., and the capital was increased to a round £18,000,000. This organisation, with headquarters in London, now controls and operates the Transvaal and Natal explosive factories. An interesting and significant recent development of the explosive industry is the manufacture of fertilisers. Both Nobel's Industries at Umbogintwini and the Cape Explosives people have gone in for this line on a large scale. The recent temporary cessation of explosive-making, due to the stoppage of work on the mines, gave a fillip to this department of the explosive companies' activities. It is a good augury that some of the energies but lately absorbed in making destructive high explosives should be turned to account in fertilising the great waste spaces of the Sub-Continent. And thus it would seem that the Rand by providing the world's largest market for explosives has hastened the advent, in the subsidiary fertiliser-making industry, of a factor which in its cheapness and abundance, is essential to the successful agricultural future of South Africa!

S. R. Potter.

The Modderfontein Factory.

THE B.S.A. EXPLOSIVES COMPANY'S GREAT ENTERPRISE TWELVE MILES FROM JOHANNESBURG. CENTRALLY SITUATED WORKS—CAPACITY OF OVER 10,000 TONS OF EXPLOSIVES PER ANNUM—TYPES OF EXPLOSIVES MANUFACTURED—SAFETY ASPECTS — MANUFACTURE OF DETONATORS, ACIDS, CHEMICALS, LEAD PIPING, Etc.—A MANY-SIDED ENTERPRISE—INDUSTRY AMIDST BEAUTIFUL SURROUNDINGS—THE SOCIAL WELFARE ASPECT.

The Modderfontein Explosives Factory has for many years past been a factor of dominant importance in the development of the mining industry in the Transvaal. The works have expanded greatly in recent years, and the following account, written by a special commissioner of the Journal who visited the factory the other day, will enable our readers to gauge the size and importance of the Modderfontein works at the present time.

The factory at Modderfontein, twelve miles north of Johannesburg, which is under the aegis of the British South Africa Explosives Company, has for many years supplied large quantities of explosives to the mines of the Witwatersrand.

Umbogintwini and Modderfontein.

Modderfontein is working in conjunction with the "Kynoch" factory at Umbogintwini in Natal, and whilst the coastal enterprise is concentrating on the manufacture of various chemicals and fertilisers used by the agricultural industry, Modderfontein is assuming a larger measure of importance than ever as an explosives factory. Some portions of the Umbogintwini plant which formerly were used for the manufacture of explosives at the Natal works are now being re-erected at Modderfontein, which is centrally situated as regards the whole Witwatersrand and therefore is in a position at easy distance from the actual points of consumption to obtain a goodly share of what in peace times must be one of the largest concentrations of the market for explosives in the world.

Exterior view of Nitration Hut, Explosives Factory, Modderfontein.

Pleasant Surroundings.

The Modderfontein factory was built in 1896, and at the time of its construction the site of the factory was well-nigh bare veld. Several interesting paintings in the company's splendid club house at Modderfontein depict the factory as it was in those days, and looking at the pictures after a wander round the company's estate, it is hard to realise that the bare surroundings of the factory as shown in the paintings have been transposed into the beautiful industrial area of to-day.

The management of the company years ago commenced a scheme of afforestation on a large scale, and instead of the virgin high veld of a quarter of a century ago the Modderfontein Dynamite Works are now surrounded by delightful plantations of graceful trees, and the purely industrial aspect of the works is brightened by many spacious and beautiful flower gardens.

Modderfontein During the Strike.

Modderfontein, at the moment of writing, like most industrial areas in the Southern Transvaal, is just reviving from the effects of the strike and revolution. In the middle of February the works became congested with explosives for which there was no prospect of an immediate sale, and a large number of hands had therefore to be laid off. The employees at Modderfontein are a contented community and no real trouble was experienced there during the strike or the revolt, although there were dangerous possibilities in the facts that this outlying factory with immense quantities of high explosives lying there had only a small protective force and that bands of armed revolutionaries were roving about in the neighbourhood.

Resuming Operations.

But the factory weathered the storm without any untoward experiences, and at the end of March a representative of this journal who was courteously shown around the factory by Mr. Colquhoun, the General Works Manager, found the staff busily engaged on the re-starting of the works. The company's estate is a large one. It covers no less than 6,000 acres, or nine square miles, and within this area a quite bewildering range of activities, all associated with the manufacture of explosives, detonators, and chemicals, are engaged in.

Modderfontein is not only an explosives factory, it is an intensely busy industrial establishment where such diverse trades as printing, the making of paper cartridges, box assembling, and the making of lead pipes and receptacles are carried out on a large scale and under expert supervision. All these branches of the factory's activity are of course subsidiary to the main business of manufacturing dynamite, gelatine, gelignite and other explosives.

General Lay-out of the Factory.

The works may be said to be broadly divided into two sections: (1) The explosives area, and (2) the non-danger area, where are situated the chemical works, administrative offices, power plants and other subsidiary departments. The explosives section contains three nitro-glycerine manufacturing units, separated from the other portions of the property by fencing and with guard gates, where an attendant takes all metallic possessions from visitors and employees generally. Two of these three explosives manufacturing units are in general commission, the third unit being in reserve.

View in the central area, Modderfontein.

High explosives manufactured at Modderfontein are: Blasting gelatine, gelignites, dynamites. These are manufactured in different grades to suit all conditions of mining operations, including permitted explosives for use in fiery coal mines. Explosives are also manufactured for agricultural purposes, which includes tree planting, ditching and draining, sub soiling, tree stumping, etc.

Another view in the central area at Modderfontein.

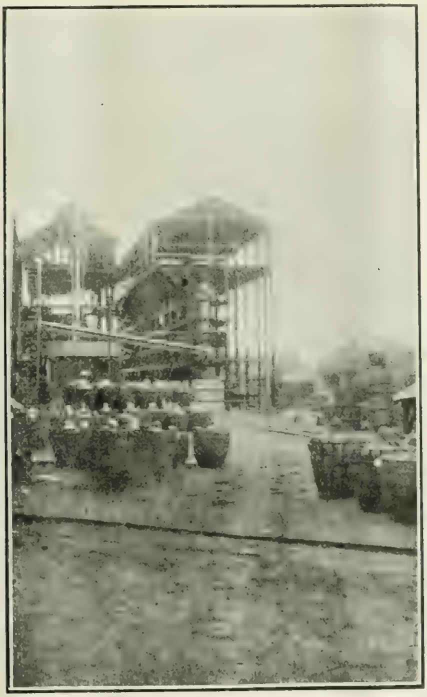
The Danger Factor.

The Witwatersrand is subject to as frequent and violent thunderstorms as any other district on earth, and at Modderfontein elaborate safeguards exist against disasters from lightning. There are 12 main lightning conductors circling the property, and at each danger area there are a large number of smaller conductors as part of the main scheme of safeguards. These precautions are eminently necessary, as in 1911 the No. 1 factory was struck and there was considerable loss of life. Portions of this factory have since been reconstructed of aluminium.

In addition to the manufacture of blasting explosives, the Modderfontein works embrace a very completely equipped detonator factory with a capacity up to two or three million detonators per month. This branch of the company's works also manufactures electric detonators.

The danger factor in works such as those at Modderfontein is a point that ever has to be kept in mind. Apart from the risk involved in thunderstorms, the manufacture, handling, storage and transport of the explosives and the isolation of the chief danger areas has to be most carefully considered, and the lay-out has to be made accordingly. The slogan of the explosives in works of this nature may truly be said to be represented in the phrase, "You handle us roughly *and we'll do the rest.*" This is especially so in the case of detonators which are manufactured of that very sensitive substance, fulminate of mercury. In consequence of the full recognition of this danger factor, the visitor does not readily gauge the size and importance of the factory at Modderfontein, for the huts wherein manufacture is carried out are scattered over a large acreage of ground and are to a considerable extent hidden from view by immense grass-covered mounds. But once inside the works the activities of employees in quaint red-coloured garments and the many covered-in factories—they may be described as industrial dug-outs—the multiplicity of the operations and the extent of ground covered by the danger areas become evident. The manufacturing operations are highly technical, consequently a large technical staff is required for even the ordinary work. There are, for instance, 14 chemists on the staff, but only about one-half of these are engaged in manufacture, the others being employed in research work. Notwithstanding the great distance separating Modderfontein from other centres of scientific activity some epoch-making discoveries have been made in the factory laboratories.

The various departments are of course all interdependent and subsidiary to the manufacture of nitro-glycerine, which is the principal ingredient of all the explosives manufactured, whether intended for gold, diamond or coal mines. For instance, sulphuric acid is required both for the making of nitric acid, which enters into the composition of nitro-glycerine, but it is also required for the making of the nitro-glycerine itself, though it does not enter into its actual composition.



Portion of Acid Plant, Modderfontein.

The company operates at Modderfontein two sulphuric acid plants. One of these is working on imported sulphur from America and Sicily, and the other on local sulphur largely consisting of auriferous pyritic concentrates from Sabie. The gold is extracted from these in the factory's own cyanide plant at Modderfontein.

Modderfontein also manufactures for arsenite of soda cattle dip, but the bulk of agricultural chemicals manufactured are turned out at the sister factory at Umbogintwini.

The Social Aspect.

Practically all the officials and workpeople employed by the company live on the estate. The residential quarters are most charmingly situated, and life at Modderfontein is generally very pleasant indeed and free from the unrest which has been such a deplorable factor in the recent industrial history of the Witwatersrand mines. Social and welfare work at Modderfontein is quite a feature of the establishment. There are cricket, football and tennis clubs, a rifle range, and a magnificently endowed club house, known as the Casino. This is charmingly situated and contains billiard and card rooms, a very excellent library, a theatre and dance hall with the company's own bioscope, and a reading-room which always contains a very wide range of periodicals. All employees of the factory are members of this club. The factory has its own doctor, hospital, church, post office and school. At the latter, apprentices receive useful technical instruction. There are in all about 700 European residents on the estate.

The complements of employees of the factory at the present are about 280 Europeans and 1,000 natives.

The factory is connected up with the main Germiston—Pretoria railway by means of a branch line, five miles in length, to Kempton Park station.

OWEN LETCHER.

Pipe Corrosion.

An extensive investigation of the corrosive action of soil on pipes used for gas and water mains and service pipes has been undertaken by the American Bureau of Standards, in co-operation with the Bureau of Soils, the Research Sub-committee of the American Committee on Electrolysis, and the pipe manufacturers. Forty localities have been selected as representative of the principal families of soils to be found throughout the United States, and at each will be buried a number of samples of every kind of iron and steel pipe in commercial use, pipes covered with representative pipe coatings, and pieces of lead sheath cable, both plain and armoured. Some of the samples will be uncovered and examined from time to time in order to determine the rate of corrosion. These tests will be supplemented by laboratory tests which will give complete data on the physical and chemical properties of the soil. Other laboratory tests will give the micro-structure, complete metallurgical history, and chemical analysis of the pipe specimens. Extensive laboratory experiments will also be conducted to determine the effects of variations in individual characteristics of both soils and pipe materials.

NOW READY.

THE S.A. MINING YEAR BOOK

1921—22.

By S. R. POTTER.

The Standard Reference Work on South African Mines.

Price 21/- net. Post free 22/6. 250pp. In Cr. Folio, Cloth, Gilt Lettered.

Obtainable from the Office of this Paper or from Argus (S.A.) Newspapers, Ltd. 82-85, Fleet Street, London, E.C. 4.

A Recognised Indispensable Work of Reference.

For Mining Investors, Mining Engineers, Mine Managers, Bankers, Stockbrokers, Solicitors or anyone interested in the Mining Industry.

A RECORD OF INFORMATION concerning Mining Companies operating in all parts of South Africa, Gold, Diamond, Copper, Tin and other Mines, Collieries, Exploration, and Mining Investment Companies.

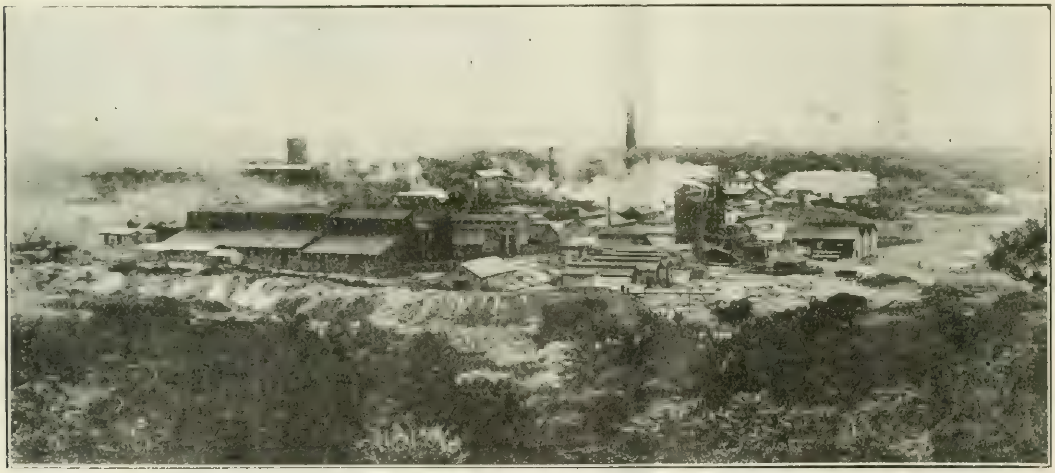
Data Twelve Months ahead of those in other Works of Reference.

The Umbogintwini Factory.

KYNOCH'S ENTERPRISE ON THE NATAL COAST—A SPLENDID WAR RECORD—CESSATION OF MANUFACTURE OF EXPLOSIVES—PRODUCTION OF AGRICULTURAL CHEMICALS ON A LARGE SCALE—ONE OF THE UNION'S LEADING INDUSTRIAL ENTERPRISES.

In the following article we deal with the Kynoch Works at Umbogintwini, the factory that grew up in the virgin bush of Natal and speedily became one of the principal industrial enterprises of the Union. Umbogintwini played a not insignificant part in the winning of the War. For years it has proved a most valuable adjunct to the mining industry, and it is now proving a most valuable aid to farmers in all parts of the country.

The factory erected by that famous Birmingham firm, Messrs. Kynoch, Ltd., at Umbogintwini, on the South Coast of Natal, is one of the most important industrial enterprises in the country, and a visit paid to the works by a special commissioner of this journal the other day enables us to give a full and authoritative account of the activities of this enterprise. The factory is situated about 15 miles from Durban, amongst beautiful surroundings, and the area covered by the works, the staff and residential quarters and the various sports grounds amounts to several hundred acres, whilst the area of the whole property is 1,500 acres.



General view of Chemical and Guncotton Works, Umbogintwini.

Originally designed as an explosives works purely and simply, the Kynoch factory in South Africa commenced production in 1908, and the most remarkable and active phase of the company's history was commenced when six years later the Great War cast its shadow of Armageddon across the world, and Umbogintwini commenced to produce munitions of war on a large scale.

Since the conclusion of the War the Umbogintwini works have become less and less an adjunct of the mining industry as a manufacturer of explosives, and more and more of an adjunct to the sister industry, agriculture, as a factory turning out large quantities of fertilisers and of other farmers' requisites, such as all classes of dips, disinfectants, etc.

Umbogintwini and Modderfontein.

Closely associated with Umbogintwini is the B.S.A. Explosives Company's factory at Modderfontein. The Modderfontein factory is by virtue of its proximity to the Rand obviously in a better position to supply the mines with explosives than is Umbogintwini. The decision was, therefore, come to some time ago gradually to suspend the manufacture of explosives at Umbogintwini and to concentrate upon this class of work at Modderfontein, leaving Umbogintwini to concentrate upon the manufacture of agricultural requisites. The carrying out of this policy has, of course, been hastened by the strike, but, as a matter of fact, the work of removing some portions of the Umbogintwini equipment to the Rand has been in progress for some months past.

Reasons for Change of Output.

When Kynoch established their factory on the Natal Coast Umbogintwini was nothing more than a cluster of native huts in the Bush. At that time the B.S.A. Explosives Company's works at Modderfontein and the Cape factory at Somerset West catered for the whole explosives trade of the country, and when Kynoch entered the field the question of competitive railway rates as between the three large producers became an acute one.

But before passing on from this branch of the Umbogintwini factories' activities to the work which is now engaging the attention of the management reference must be made to the achievements of the factory in the past in regard to the manufacture of explosives, and especially to the splendid record of Umbogintwini's War service.

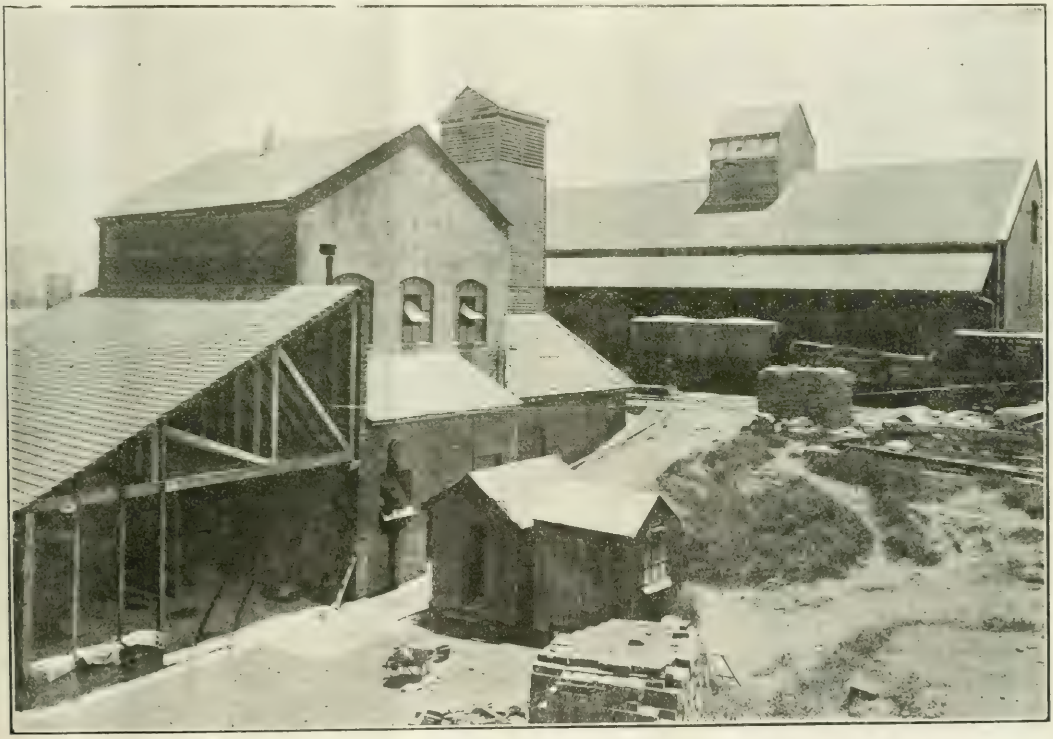
Helping to Win the War.

The normal explosives output of the factory previously to closing down this portion of the works was about 120 tons per week. The greater part of this production was consumed on the Rand, but the factory also exported explosives as far afield as Australia, New Zealand, and India. The company has also supplied large quantities of " permitted explosives to the South African coal mines. When the War broke out Umbogintwini, on the beautiful and peaceful Natal Coast, though far removed from the scenes of the struggle, became an important factor in deciding the great issue on the battlefields of distant Europe. Not only was the factory able to supply South African mines and quarries with 140 tons of explosives per week, but it despatched 120 tons of guncotton per week to England. It was, in fact, proved to be possible to send machinery out from England for the output of munitions of war, and to send home the product of that machinery before works could be started in England. Umbogintwini continued to turn out guncotton until 1918, when other works crept up, and it may be noted that only one consignment was lost through enemy submarine action.

Après la Guerre.

With commendable foresight, the Kynoch management early in the War began to consider the position of the factory after the cessation of hostilities, and a Post-War Industries Committee to consider the manufacture of various articles previously imported was formed. This Committee immediately commenced to take stock of the position and to prepare for a continuation of the company's usefulness after the War was over.

Kynoch were the first firm to manufacture fertilisers on a large scale in South Africa. The plant at Umbogintwini is capable of turning out 35,000 tons of superphosphate per annum, and the largest output in one year up-to-date has been 15,000 tons. In pursuance of the policy of producing farmers' requirements, other lines manufactured in addition to agricultural fertilisers are cattle dips, sheep dips, tree sprays and disinfectants. Umbogintwini is also manufacturing alumina ferric, the necessary precipitant for water purification, which is largely used by the various municipalities of the Union. The company also produces large quantities of acids, including sulphuric, nitric, hydrochloric and hydrofluoric. They are produced in two grades, commercial and pure, the latter being of the highest standard of purity, fulfilling all the demands for pharmaceutical, analytical and research work.



Section of Superphosphate Plant, Umbogintwini.

Company's Famous "Champion" Dip.

The company's Champion cattle dip is the only dip made entirely from South African ingredients, and it has already gained a high reputation amongst farmers all over the country. The arsenic comes from the Champion Mine, near Odzi in Rhodesia, and the bitter aloes used in the dip are brought from the Cape. The company also manufactures a very efficient lime sulphur sheep dip, and specialises in the production of a miscible oil known as Harbas, which is a particularly efficient scale killer.

A Thorough Testing Organisation.

The factory organisation is handling the manufacture of agricultural chemicals with marked and characteristic thoroughness. Farmers are invited to send samples of soil to the works, and these are thoroughly analysed in the elaborate chemical laboratory. After complete investigations the factory's experts recommend the particular fertiliser to be employed having regard to the nature of the soil disclosed by analyses and the type of crop which it is proposed to grow. The laboratory department at Umbogintwini may, in fact, be truly said to be one of the most marked features of the works. All raw materials employed in the works are thoroughly tested before utilisation in the factory, and no products are allowed to go out of the works until an up-to-standard certificate has been issued. The works comprise a very complete experimental garden in which tobacco, mealies and various other crops are grown under close experimental supervision and where the values of fertilisers and sprays are determined in actual practice. The factory's capacity for sheep dip is 200,000 gallons a year, and the capacity for the manufacture of cattle dip may be said to be unlimited. The company is connected with the Standard Arsenic Co., Rhodesia

Utilisation of Local Resources.

In the manufacture of these agricultural chemicals large quantities of raw materials are obtained from overseas. Sulphur in the form of iron pyrites is imported in large quantities from Spain, but a certain amount has been obtained in the Union, notably from the Sabie District and the Black Reef In connection with the Sabie concentrates, it may be worth while remarking that no less than 10,000 ounces of gold have been recovered from these concentrates by means of a subsidiary cyanide plant at the Umbogintwini works. Phosphate rock, nitrates and potash are imported from Europe and North Africa. Considerable quantities of other ingredients, such as bones, copra, blood meal, etc., are utilised in the production of the well-known Champion brand of fertilisers.

It is from many points of view to be regretted that more of the many and varied substances used in the manufacture of the various products of the factory are not obtained locally. To a certain extent this is unavoidable, yet at the same time it seems to us not impossible to draw more on the natural resources of South Africa for the manufacture of the varied and valuable products of the Umbogintwini works which find such a ready and extensive market in South Africa and Rhodesia. Take sulphur, for example. There are known to be very large pyritic deposits in various parts of the Union; there is at least one such occurrence in the Western Cape Province. Of course, the factor of transport enters extensively into the question of working these deposits. In other words, it is quite conceivably more profitable for the Umbogintwini works to import sulphur from Spain than to go to the expense of building a railway line to some pyritic occurrence which is situated at some considerable distance from existing lines of communication. All the same, we cannot help thinking that the Umbogintwini and other managements of explosives and chemical works in South Africa might do more than hitherto has been achieved in the direction indicated above.

The Experimental Garden at Umbogintwini.

Other Activities.

Numerous other activities of the factory call for mention. For instance, it may be remarked that the manufacture of anhydrous ammonia for cold storage was started during the War on account of the difficulty of getting ammonia from overseas. Until recently the employees of the works numbered 250 whites and 800 to 900 coloured employees. During the period of greatest activity, when large quantities of guncotton were being manufactured, 500 whites and 3,000 natives were employed. The present complement is about 50 whites and 250 coloured men. Up to date approximately three-quarters of a million sterling has been expended on capital account at Umbogintwini, whilst over a million sterilng has been paid in wages to employees and half-a-million to coloured employees.

The Staff.

The present staff personnel of the works and period of service is as under:—General Works Manager, W. Helcke, 25 years with company, managed works at home; W. V. Blewett, 15 years Chemical Works Manager; W. J. Taylor, Manager (18 years) of Development Department; E. C. Rees, Chief Chemist (11 years); W. E. Martin, Manager (24 years) Explosives Works; G. King, Chief Engineer (10 years); P. J. Gorman, Secretary (20 years).

An Ideal Industrial Site.

The Umbogintwini works constitute one of the leading industrial enterprises of the Union, and the excellent work which is being achieved there, particularly in the direction of scientific agriculture, deserves the fullest support of the Government. We would, therefore, earnestly recommend to our legislators that they should foster and encourage such an industry, and particularly so by the institution of a protective tariff which would render this local industry safe from the evil effects of the dumping of cheap Continental products. In many ways it is pathetic to see so much valuable plant and buildings which played such a valuable part during the War overgrown with weeds. Umbogintwini is admirably adapted for the establishment of industries. Features of the works in this connection are ample power, water, branch line connecting with main railway, efficient technical organisation, large number of spacious buildings, and a model village. The works include a complete testing laboratory and up-to-date fitting and carpenters' shops, whilst something like £30,000 worth of stores are held at the factory. Sympathetic treatment by the Government should result in a material expansion of this coastal enterprise, and the full utilisation of all the factory's important and varied resources to the lasting benefit of South Africa.

Another View of the Phosphate Plant.

Industrial Peace.

Before leaving the subject of the Umbogintwini works special reference must be made to the splendidly organised social welfare work which has been carried out at this delectable spot. The company's employees are well and comfortably housed. There are well-built staff quarters, a very sporting 9-hole golf course, tennis, cricket and football grounds. And all these are to be found in a setting of quiet and peaceful beauty in which industrial unrest does not seem to fructify. At any rate Umbogintwini has been notably free from strikes. For our part, we find it difficult to believe that the professional agitator can find it easy to carry on his nefarious trade in such a contented atmosphere and amidst such a pleasing environment as is to be found at this charming outpost of industry 15 miles from the progressive port of Durban.

Umbogintwini products always form a noteworthy exhibit at agricultural shows, and at the forthcoming Witwatersrand Exhibition the displays of Kynoch manufactures should be seen by every progressive farmer in the Union and Rhodesia.

Owen Letcher.

The "Delmore" Group of Industries.

SOAPS, CANDLES AND ANTIFRICTION GREASES—VARIOUS CHEMICAL ACTIVITIES—GREAT POSSIBILITIES RESTRICTED BY LIMITED MARKETS.

The extensive works of the New Transvaal Chemical Company at Delmore constitute one of the most important groups of industries outside mining in the Transvaal. Soap, candles and numerous chemical products are manufactured, and the capacity of the works is only limited by the scope of the market for the products. The company, which owes its inception and success to the scientific and business ability of the late Dr. Schlesinger-Delmore, has been in existence for 30 years. It produces most of the candles, practically all the anti-friction grease and a considerable amount of the chemicals used on the mines. Its output of other important products, such as sulphuric acid and bleaching powder, is considerable and capable of increase, should the demand warrant it. As far as possible the raw materials used are of South African origin, and the products of its affiliated company, the S.A. Oil and Fat Industries, Ltd., of Durban, are liberally drawn on in this connection.

At Delmore, a few miles beyond Germiston, are situated the extensive works of the New Transvaal Chemical Company, Ltd. Originally started at Pretoria by the late Dr. J. Schlesinger-Delmore — the pioneer of chemical industry in South Africa — the works were moved to Delmore about thirty years ago, and they have during that period steadily grown both in point of magnitude of operations and variety of product. The modest beginnings of the works were mainly devoted to the treatment of refractory gold ores, but gradually the enterprise and scientific knowledge of the founder revealed themselves in the addition of other chemical industries, such as sulphuric acid manufacture, soap and candle-making. Of these, of course, sulphuric acid is of the greatest importance, since it forms the basis of so many other industries. As Prof. Sir George Cory recalled last week at the University of Pretoria Degree Day, the state of civilisation and prosperity of a country may be gauged by the amount of sulphuric acid it consumes annually. Thirty years ago South Africa did not produce any of this essential. To-day it is produced in the Union in considerable quantities, and Delmore is supplying a substantial portion of local requirements.

Acid Works.

The sulphuric acid plant, comprising an up-to-date "Chamber Plant," as also concentrating plant, constitutes a prominent feature of the works, by reason of its extent and size. The principal consumers of sulphuric acid are the gold mines. There is also a growing consumption by soda-water manufacturers and creameries, etc., and potential markets exist in connection with utilisation of coal by-products, which industry to-day has advanced beyond experimental stages, and will in the near future constitute a prominent feature of South African local industries. Del-

A Corner of the Works at Delmore.

[illegible] consumer of pyrites, requiring a substantial portion of its sulphuric acid for the manufacture of bleaching powder, hydrochloric acid, and in connection with its fat-splitting plant. At one time used for the manufacture of sulphuric acid, gold-bearing pyrites concentrates from Machadodorp and the Pilgrim's Rest district are used, and in this direction it is of interest to note that the late Dr. [illegible] was the first in South Africa to use this material for that purpose. Since then, more particularly during the War, other important manufacturers of sulphuric acid have followed suit.

Incidental to these activities, a large up-to-date gold-recovery plant has had to be provided, where the gold, silver and copper in these refractory ores are recovered. The hydrochloric acid works, with their large condensing towers are a landmark of the district. They supply the mines with requirements for their "Butters" plants, and meet small local demands for "spirits of salts" for soldering purposes, etc.

Candle Works, Soap Works, Grease Works.

The above departments, with their auxiliaries, occupy by far the largest portion of the extensive area covered by the company's works. By reason of the fact that the raw materials for these manufactures are largely the same, the departments are closely inter-connected. The fact need only be recalled here that, chemically speaking, whilst "soaps" are the alkali-compounds of mixtures of various fatty acids, modern candles are mixtures of solid fatty acids with solid hydrocarbons of the paraffin-series (mineral waxes). The sources of all these fatty acids are animal and vegetable fats and oils, such as mutton and beef tallow, whale oil, palm oil, cocoanut oil, castor oil, etc., etc. The above raw materials are mixtures of triglycerides of fatty acids, tallow, for instance, consisting principally of the glycerides of stearic, palmitic and oleic acid, whilst palm oil and cocoanut oil contain principally the glycerides of laulic, myristic and capric acid, with only a comparatively small percentage of stearic, palmitic and oleic acid glycerides. As all of these fatty acids have distinct physical properties which determine their suitability for the final purpose which they are to serve, they have to be separated and, apart from such separation, the glycerine must be recovered, as that "useless by-product" of old days has to-day, by reason of its utilisation in the manufacture of high explosives, become an important product of the fat industry. The complicated processes and vast plant used in connection with the above are another striking illustration of the strides and advance made in chemical industries by reason of application of scientific knowledge to the problems of everyday life. The good old days of the "tallow candle" have gone for ever. The chemical knowledge of the composition of tallow soon led to the realisation of the fact that the smoky, evil smelling flame of the tallow candle was principally due to the formation of acrolein, formed by the burning of the glycerides. Therefore the glycerine was separated and recovered. The next step was the recognition that only the fatty acids of high melting point (stearic and palmitic acid) could be used if the oily, smeary appearance of candles was to be done away with. Hence, these acids were separately recovered. In due course it was found that the burning properties of mineral waxes (i.e. products of petroleum or oil-shale distillation) could, with advantage, be utilised in admixing them to the list of materials used in manufacture of candles. Thus another step in cheapening and improving candles was achieved. The latest progress in that industry is the synthetic conversion of liquid animal and vegetable oils into solid fatty acids suitable for candle and soap materials, as an illustration of which can be mentioned the use of sperm-stearine at Delmore, derived from the oil of sperm whales caught by the company's whaling fleet in South African waters. A detailed description of the vast plant used in obtaining the final raw materials from raw products, such as the oil seeds, whale oil, tallow, etc., would be far beyond the scope of this general review of the company's activities. It will suffice to say that in respect of recovery of oils from the seeds, the company uses both the methods of extracting the oils by pressure and by extraction with solvents, and, in respect of the preparation of fatty acids from the glycerides, the autoclave saponification, the fatty acid distillation and the catalytic splitting process are employed, as well as the most recent method of converting more or less useless soft oils into "hardened" products, accomplished by the synthetic addition of electrolytic hydrogen to the former.

Stearine, i.e. the collective name under which the mixture of stearic and palmitic acid, previously referred to, is known, forms the most valuable part of modern candle mixtures by reason of imparting to the candles the necessary rigidity required to withstand ordinary atmospheric temperatures. In hot climates or in underground conditions that constituent has to be increased according to circumstances. The synthetic stearine now largely used serves, of course, the same purpose.

The Candle Wick.

Naturally, the wick is a most important part of a candle, and unless it is of proper size and texture either too much or too little fuel will be supplied to the flame, and the candle will gutter or be otherwise unsatisfactory. At Delmore, the material generally employed is cotton yarn, plaited or "braided" by machinery, and treated or "pickled" with a solution of boracic acid, ammonium or potassium nitrate, or other salt. The tightness of the plaiting varies with the material used for the candle, wicks for stearine being looser than for paraffin, but tighter than for wax or spermaceti. The plaited wick is flat and curls over as the candle burns, and thus the end is kept projecting into the outer part of the flame where it is consumed, complete combustion being aided by the pickling process it has undergone.

The Moulding Process.

Though there are several ways of making candles, that employed at Delmore is, of course, the best and most modern. It is known as the moulding process, and it is effected by most delicate, automatic machinery. In the moulding process, a number of slightly conical moulds are fixed by their larger extremity to a kind of trough, with their tapered ends projecting downwards, and with wicks arranged down their centres. The molten material is poured into the trough and fills the moulds, from which the candles are withdrawn when solidified. The candle-moulding machines are continuous in their operation; long lengths of wick are coiled on bobbins, one for each mould, and the act of removing one set of candle from their moulds draws in a fresh set of wicks. "Self-fitting ends," which were invented in 1864, and being shaped like a truncated cone enable the candles to be fixed in candlesticks of any diameter, are formed by means of an attachment to the tops of the moulds. Provision is made to regulate the temperature of the moulds accurately, in order that the candles come out freely and be of good appearance. For stearine candles the moulds are immersed in tepid water and the cooling is slow, so that the material will crystallise. For paraffin, on the other hand, the moulds are rather hotter than the molten material, and are quickly cooled to prevent the candles from sticking.

Every stage of the process demands most delicate and experienced handling and demands the concentrated attention of a trained staff. Only long-established and highly-specialised works such as those at Delmore can claim to possess such a staff. The mining candles produced at Delmore and the associated works at Jacobs are justly famed for their excellent quality throughout the mining industry of South Africa. Of these, the best known varieties are "Arctic," "Rand Eclipse," and "Special B." What are known as "merchant candles," *i.e.*, those manufactured for the general trade, enjoy a wide popularity throughout the country, the chief brands being known as "Royal," "Delmore Sperm," "Excelsior Sperm," and

"Searchlight." Wherever used, the Delmore label of origin is synonymous with the purity and excellence of the product.

The Delmore Soaps.

Thanks to liberal and enterprising advertising, the products of the Delmore soap works are too well known to require detailed description. All classes of tablet, bar and soft soaps are made, ranging from the most exquisite toilet variety, equal to the best boomed imported article, to the simplest of household soaps. The most widely known product of the works is, of course, " Surprise Soap," which is now a veritable household word throughout South Africa, and an article that can compete with any imported soap in purity and value. Modern soap-making is, of course, a very highly-developed science and art, and at Delmore the highest technical skill, the purest of ingredients, and the last word in modern machinery combine to produce a first-rate article that cannot be beaten anywhere.

Anti-Friction Grease.

From soap and candle-making to grease manufacture is but a step. Indeed, of chemical industries generally it may be said that they merge almost imperceptibly and offer a continual inducement to industrial expansion. On the mines, as in other industries, friction is the great unseen enemy of economy and efficiency in every department. Delmore anti-friction grease has become a staple product on the mines, and the other forms of high-grade greases produced at the works rank with the very best imported articles. The varieties made include A.1 antifriction grease, for use in automatic greasers, cup and other special greases.

Another view showing portion of the Progressive Works at Delmore.

Other Chemicals.

With the technical skill, knowledge and experience at its command, Delmore can turn out chemical products of almost any description. Unfortunately, here again the meagreness of the demand conditions every activity. Amongst the minor products of the works may be mentioned chloride of lime (bleaching powder), sulphate of soda, sulphate of alumina, manganate of soda, silicate of soda, bisulphate of soda and high quality stearine pitch. War conditions led to the development of the bleaching powder industry, and the excellence of the article turned out will doubtless retain the market, such as it is, for this article. Other chemical products, the manufacture of which was induced by local scarcity due to war conditions, have been less successful, and the only reward they brought was the demonstration of the versatility and adaptability of the organisation. Fertiliser-making, which at one time bulked largely in the output of the works has been abandoned in view of the limited demand consequent on the stagnation in the farming industry. Than the experts at Delmore, no one sees more clearly, or holds stronger views upon, the paramount need for large scale irrigation as a condition precedent to successful chemical and other manufacturing industries. The paradox of this contention is explained by their conviction that until the advent of wholesale irrigation, with fertilisers as a corollary, farming cannot pay, and until farming pays there cannot be the requisite population to ensure successful industries for the country. Prof. Sir George Cory's description—already referred to—of the use of sulphuric acid as a measure of a country's prosperity is therefore explained by the essential part it plays in fertiliser-making, which in turn is governed, in the last resort, by irrigation. Thus we have in the group of industries, actual and potential, at Delmore the reflex of the general industrial progress of the country.

The Laboratory and Staff.

A large and highly-qualified staff of chemists is maintained at the works; and their duties include control tests and general technical supervision of all the various processes. Research work naturally plays a big part and the technical staff is ever on the lookout to find new fields for industrial expansion.

General.

No description of Delmore is complete without mention of the liberal policy observed by the company towards its employees of all grades. An average force of no less than one hundred white workers and three hundred coloured is in normal times employed, and their comfort and working conditions are carefully considered. For the staff and principal white employees excellent housing accommodation is provided and the health and recreation of those resident on the property are closely studied. The dislocation of industry caused by the recent general strike did not leave Delmore unaffected, but every effort is now being made to recover the time lost and restore the place to its wonted activity. To the Technical Director of the Company, Mr. Whytehead, to Mr. Serocold Skeels, director, and to Mr. Meeser, secretary of the company, our sincerest thanks are due for the courtesy and kindness extended to us on our recent visit to these most interesting works.

S. R. POTTER.

BLUE ASBESTOS
FOR SALE.
20 to 25 tons monthly from end of April.

Prices and samples from :
E. G. BRYANT,
Box 11,
PRIESKA.

Fertilisers; What South African Soils Need.

PLANT FOOD AS MUCH REQUIRED AS CHILD FOOD—PUT BACK WHAT YOU TAKE OUT.

(By a Special Correspondent).

We often see the question asked: " Is South Africa drying up ? " and though authorities differ there is no doubt we think that if the question were " Is South African soil becoming impoverished? " the reply would be emphatically in the affirmative. For a century or more plant foods have been taken out of the soil with the crops and only a fraction returned, so that when a recent visitor from England inspected farm lands, the first thing he wanted to know was " why manures were not put on the fields and meadows." We may take it that European acres are spread with manures and fertilisers, year by year. The old Belgian saying: " No manure, no crops; no crops, no cattle; no cattle, no manure " goes back to the time of the Romans, B.C., when Varro and other writers on agriculture of those far-off days advised the keeping of livestock in order to provide manure, and demanded that a pit should be made into which was to go all the sweepings, the leaves, the household waste, for the making of compost for the crops. They kept pigeons, thrushes, larks by the thousand to provide Roman feasts, and all the droppings were carefully kept to fertilise the soil.

In South Africa it is otherwise. The idea of thousands of sheep and cattle kraals was apparently to create huge mounds of manure, some of which, being fired, burnt for years. In Jersey the huge potato crop is heavily fertilised by superphosphates and every stick of sea-weed is gathered to make manure. In South Africa thousands of tons of sea-weed are thrown up by the tides each year, covered under sand, and lost to fertility.

Comparative Crop Figures.

The result: Quoting from the 1918 census, we find that the wheat crop throughout the Union averaged, per morgen, 6·30 muids; rye, 3·82; maize, 4·65; Kafir corn, 4·20; or to express this in bags and bushels per acre, we find: Wheat, 3 bags or 10 bushels; rye, under 2 bags or less than 7 bushels; and maize, 2⅓ bags or about 7 bushels. Here is the comparison:—

	Average per Acre.	
	United States.	South Africa.
Wheat (bushels) ..	14·9	10·0
Maize (bushels) ...	26·0	7·0
Rye (bushels)	16·3	6·45
Potatoes (bushels)	97·9	—
Cotton (lb.)	193·1	—
Hay, cultivated (tons) ...	1·34	
Tobacco (lb.)	820·5	

We cannot give the average production in South Africa of potatoes, cotton, tobacco and hay, for the returns are not forthcoming, but we see how heavy the drop is on wheat and maize, leaving out of consideration the enormous difference between the bulk of crops of the two countries. The American farmers only keep up their high average production by steady manuring and the use of fertilisers.

Not only does South Africa not return to the soil the plant foods taken out, but by grass fires it persistently burns off the humus and the cattle and sheep droppings which are deposited on the veld. Of course, the law prohibits grass burning. That is to say, grass burning is prohibited by the letter of the law, but in the winter any traveller in this year of 1922 will see veld fires any night, somewhere or other, from say March to August. Thus tons of humus and tons of droppings are burnt off in order that the spring may put forth green grass for the ewes, lambs, and cows. The ashes give the roots a slight fillip, but the earth is left bare to the sun; the finer grasses vanish; the hard ground is ready to pour off the rain when it does fall; and the grazing veld deteriorates season by season.

The grazing veld is robbed of its plant food season by season with an extravagance that beats the Rake's Progress. And so with the crops. If it was not so, South Africa would not produce less wheat and maize per acre than any country in the running. Belgium leads the world with 38·70 bushels of wheat per acre, and Belgium probably leads in fertilising the land; South Africa comes about 24th, and many of its wheat lands cry for fertilisers and are almost too anaemic to grow a crop of weeds.

Natural Manures and Fertilisers in South Africa.

Natural manures: These in the Union consists of gypsum deposits, rock phosphates, and fairly large accumulations of guano on the islands off Luderitzbucht, and Saldanha Bay.

Fertilisers: We would mention that when Australia devoted increased attention to natural and artificial fertilisers, together with fallowing, there was an improvement in crops and veld. No less than 86 firms were occupied in the manufacture of artificial fertilisers a few years back, and they actually exported 663,000 cwts. to New Zealand one year, although the imports for that same year were four million cwts., valued at £587,000. South Australia, in 1914, manured 81·55 per cent. of the crops with 100,435 loads of stall manure and 97,023 tons of artificial; Victoria manured 77·45 per cent. with 219,423 loads stall manure and 105,612 tons artificial; while New South Wales used 166,300 loads stall manure and 50,476 tons of fertiliser to 2,224,600 acres.

South Africa imported about £190,000 worth of fertilisers in 1913 and a little less in 1914. In 1920 the imports were 65½ million lb. worth £239,779, and in 1919 they were 25¼ million lb. valued at £52,000. Taking the quantities for 1913, when the import was regular, we find that the Union took from oversea 12 million lb. basic slag valued at £11,411; 9½ million lb. bone manure value £20,103; 701,553 lb. guano at £1,205; 146,496 lb. nitrate of soda at £687; 1½ million lb. raw phosphates at £1,705; 4 million lb. potash manure at £18,107; 800,000 lb. sulphate of ammonia at £4,707; 82 million lb. superphosphate at £95,273; and all other kinds amounting to 17 million lb. at £35,233. The bulk of the imports was from Germany and Holland.

When communicating with Advertisers

kindly mention the

SOUTH AFRICAN MINING AND

ENGINEERING JOURNAL.

Local production. We have referred to the fertiliser works under the Cape Explosives Works at Somerset West, Cape, and Messrs. Kynochs, Ltd., Natal South Coast. There are other fertilising factories at work, including one at Salisbury, Southern Rhodesia; another at Bethlehem, O.F.S., at the works of the Smithfield Cold Storage Works; and others at the abattoirs of the principal towns, which produce blood and bone fertilisers. The whale fisheries at Saldanha Bay and on the Natal coast also turn out fertilisers and commercial use is made of kraal ash. The sea will in time prove a steady source of supply when the vast quantities of sea-weed are commercially used, and no doubt highly concentrated fertilisers will be made out of surplus fish and fish offal. Fish and meat refuse are sometimes sold as guano, which is really the droppings of sea birds, and they are usually highly nitrogenous. Real guano contains nitrogenous and phosphatic ingredients in forms easily assimilated by plants. Dissolved bones go to the making of superphosphates for root crops, and compound manures containing definite amounts of nitrogen, potash, etc., are made up and sold for fertilising wheat, maize, orchards, etc. Lime is not a manure, but is a good sweetener and breaker-up, while in the form of gypsum it is used for dressing fields and especially brak lands. Sulphur also is receiving attention, and of course kraal manures occupy a leading place in the economy of the farm. Basic slag is ground fine from the "converters" used in steel-making, which absorb phosphorus from the metal during manufacture. It is useful on heavy clay lands. Bones, blood, hair, hoofs, feathers, all go to the making of fertilisers, and the horse parings from farriers are good providers of plant food.

Some English Experiments.

Experiments made at Rothamstead, England, on heavy land showed the following returns over 50 years: Land that was continuously cropped without any manure at all gave 17 bushels per acre from 1841 to 1851; 14·5 bushels from 1862 to 1871; 12·6 bushels from 1882 to 1891; and an average of 13·1 bushels per acre over the 50 years. Land that received farmyard manure yearly gave an average of 35·6 bushels over 50 years. At Woburn, on light soil unmanured, the average wheat yield per acre over 50 years was 14·2 bushels; and 26·2 bushels per acre over 50 years when the land received farmyard manure yearly.

Here we find a difference of 22 bushels per acre on heavy soil and of 12 bushels per acre on light soil in favour of manure—or a difference of, say, from 3½ bags to 6 bags. Taking the value of the bag roughly at 20s., here was a loss of from £175 to £300 per acre over 50 years.

An instance may be given of red loam that produced 7 bags of mealies per acre in the Union without manure for two years running and then dropped gradually till on the fifth cropping the yield was only 2½ bags. That is to say, plant food had been extracted that gave an extra 4½ bags, equal say to £3. An expenditure of 10s. per acre on manures or fertilisers would have stopped the deterioration but nothing was put back, and it is quite certain that if South Africa does not go in systematically for fertilising then the land must become worn out. This neglect is, however, unthinkable, and we foresee great development in fertiliser factories in South Africa.

Ernest Glanville.

Chemicals, Fertilisers, Soap and Candle Factories of the Union.

DETAILS OF PRODUCTION DURING RECENT YEARS—SOME ESSENTIAL STATISTICS.

The following statistics of production, etc., of chemical works, soap and candle factories and similar enterprises are abstracted from the recently published report issued by the Office of Census and Statistics, Pretoria:—

Heading.]	Drugs, Chemicals (including Fertilizers and By-Products), Paints, Varnishes and Allied Products.			
	1916-17.	1917-18.	1918-19.	1919-20.
Number of establishments ..	93	97	107	108
Value of land and buildings ..	£1,710,949	£1,810,303	£1,590,929	£1,743,685
Value of machinery, plant, and tools	£1,427,428	£1,782,087	£2,242,236	£2,176,080
Number of employees—				
European	2,208	2,265	2,231	2,228
Other	6,231	6,833	6,541	6,932
Total	8,439	9,098	8,772	9,160
Salaries and wages paid to				
Europeans	£493,555	£509,278	£537,572	£587,053
Others	£202,912	£221,335	£229,780	£286,203
Total . ..	£696,467	£730,613	£767,352	£873,256
Horse power of engines and motors—h.p.	7,402	8,745	18,672	19,283
Cost of fuel, light, and power	£83,565	£132,878	£147,133	£114,023
Value of materials used—				
South African	£1,025,135	£1,255,305	£1,210,281	£1,518,132
Imported	£2,370,321	£2,663,091	£2,509,426	£3,344,327
Total	£3,395,456	£3,918,396	£3,719,707	£4,862,459
Value of articles produced and work done—				
Articles produced	£5,301,852	£6,170,220	£5,633,805	£7,245,665
Repair and other work done	£2,563			£100
Total	£5,304,415	£6,170,220	£5,633,805	£7,245,765
Value added to materials by process of manufacture or treatment	£1,908,959	£2,251,824	£1,914,098	£2,383,306

			Soap.			
Date.	Laundry and Household.		Scouring.		Toilet.	
	lb.	£	lb.	£	lb.	£
1915-16	49,590,000*	882,320*	—	—	—	—
1916-17	34,030,000*	776,536*	—	—	—	—
1917-18	46,290,048	987,176	1,058,880	26,202	1,452,666	79,540
1918-19	33,137,602	791,731	853,016	20,229	1,024,932	66,983
1919-20	44,439,779	1,419,661	1,048,202	30,523	1,329,709	100,908

			Soap.			
Date.	Antiseptic.		Soft.		Powder and Flake.	
	lb.	£	lb.	£	lb.	£
1915-16	—	—	—	—	—	—
1916-17	—	—	—	—	—	—
1917-18	209,234	4,947	1,144,015	22,290	278,116	7,090
1918-19	800	19	865,735	17,724	478,926	13,439
1919-20	260,040	6,117	754,146	20,757	564,260	38,960

Date.	Glycerine.		Soda Crystals.		Grease.	
1915-16	1,700,000	49,128	—		—	—
1916-17	1,134,000	31,841	658,000	3,216	—	—
1917-18	1,180,609	35,224	2,519,480	14,045	3,094,811	49,540
1918-19	1,138,741	46,347	2,010,197	11,276	5,667,152	109,350
1919-20	1,233,417	38,616	2,717,974	15,165	3,253,793	45,058

Date.	Fatty Acids.		Candles.		Other Articles Manufactured or Produced.	Total Value of Articles Manufactured or Produced.
	lb.	£	lb.	£	£	£
1915-16	—	—	29,208,000	625,836	178,105	1,735,389
1916-17	—	—	23,770,000	740,839	210,077	1,762,509
1917-18	6,960,000	153,316	24,805,620	892,623	76,193	2,348,186
1918-19	6,602,000	170,142	19,355,958	923,709	89,050	2,259,999
1919-20	5,474,000	163,307	22,105,270	1,030,963	100,224	3,010,259

*Including "All Soap."

The "Capex" Group of Industries.

HISTORY OF THE BEGINNINGS AND GROWTH OF A GREAT SOUTH AFRICAN ENTERPRISE—EXPLOSIVES, CHEMICALS, FERTILISERS AND ALLIED PRODUCTS—HOW SCIENCE AND CAPITAL COMBINE TO ADVANCE SOUTH AFRICA'S BASIC INDUSTRIES—CAPE EXPLOSIVES WORKS, LTD., TO SUPPLY THE WHOLE COUNTRY'S FERTILISERS—AN OBJECT LESSON IN SUCCESSFUL AND FAR-SEEING ORGANISATION.

In the following article we attempt to sketch the various industrial activities grouped together at Somerset West under the aegis of the Cape Explosives Works, Limited—an organisation that owes its inception to the vision and enterprise of De Beers. Originally started for the manufacture of explosives—as the name implies—the undertaking has now expanded into a group of large industries, of which fertilizers bid fair to be most important. The whole organisation has been conceived and planned on the broadest and most ambitious lines with a view to supplying all the present and future requirements of the basic industries of South Africa, viz., mining and agriculture in all their branches. To that end capital has enlisted at Somerset West in its service science, in the shape of the best available technical skill, and administrative ability of the highest order. Excellence in everything has been the aim—indeed the achievement—of the great undertaking, and the future will show the wisdom of this policy.

About thirty miles from Capetown, in the shelter of the Hottentots Holland Mountains, and delightfully situated on the shores of False Bay, are the extensive and far-flung factories of the Cape Explosives Works, Ltd. In the twenty-one years since the enterprise was started, industry has been added to industry till to-day the name is singularly inadequate to describe what is in reality a group of different industries flourishing side by side in the wide spaces of the pleasant Somerset West valley. Everyone who has read South African history knows the origin of the dynamite factory at Somerset West. Briefly, it was started by De Beers, after the Boer War, as a subsidiary company to manufacture high-grade explosives in order to break a monopoly that had the control of the prices of this essential commodity for the mines. That object was entirely achieved, thanks to the organising genius of the late W. R. Quinan, uncle of "K. B." who wrought such marvels in the recent War—and to the wonted liberal financial policy of its backers. The site chosen for the industry proved an ideal one—not only from the safety point of view but for half a hundred other reasons as well; and when the company later on decided to launch out on a wider industrial field they found everything ready to their hand. For space they had many square miles of the finest country, hill-sheltered and bounded by the sea, with abundant fresh water, direct railway communication with coast and interior, good roads, and a splendid climate. It is easy to see how step by step the different industries were evolved from the manufacture of explosives. Acids, glycerine, chemicals, detonators, sheep dips, fertilisers—they grew from each other naturally and by easy stages. Fortunately those at the head of affairs had the vision and the foresight to grasp the possibilities and to secure the support of those in control of the purse-strings. The "fruit and blossom" of that progressive policy is to be seen to-day in the mammoth fertiliser factory that has sprung up within the last year, dominating the surrounding valley and dwarfing the earlier efforts and older evidences of successful industry around it. Before attempting to describe this important phase of the company's activity, however, it may be well to deal with its pioneer products and the general scope and plan of the works.

The "Nerve Centre."

Picturesquely situated near the shores of a lake, surrounded by trees and flower gardens, are the chief administrative offices of the company. Lofty, roomy and cool, the interior admirably suggests mental concentration and conservation of energy, and the pleasing exterior has architectural merits due in part to the genius of the late J. M. Solomon. Hard by, facing the lake, is a spacious club-house for the staff and employees; and beyond it is the extensive laboratory which may be described as the technical brain of the whole works. The central laboratory is equipped with all that is latest and best in the way of testing and research apparatus applicable to the several industries. Here is centralised the chemical and research work of the factory. In conjunction with the laboratory and housed under the same roof is a first-rate library equipped with the world's leading technical works, supplemented by a vast classified array of the valuable periodical technical literature which plays so important a part in the reading of the scientist of to-day.

The Explosive Works.

The explosive works proper cover a vast area, stretching along the shores of False Bay. The usual principle of limiting the damage done by accidental explosions by leaving considerable spaces between the different works has been followed. In addition, substantial earthworks have been erected to break the force of any such explosions; and the whole works are planned upon the most approved modern lines.

The varieties of explosives made include blasting gelatine and gelignites, almost exclusively used in connection with the gold mining industry; dynamites of varying strengths for diamond and coal mining, road-making, quarrying, well-sinking, and railway grading. Other important varieties made include irrigation and agricultural explosives for subsoiling in cereal lands, orchards and vineyards; also for tree-planting, stump blasting and ditching. It is an open secret that the works supply sixty per cent. of the total explosives consumed by the Rand mining industry; and practically all the needs of the diamond mining industry and of a large proportion of the Rhodesian mines. It may be explained that dynamite is the name generally applied to modern industrial explosives in which nitro-glycerine forms an essential part. They are divided into two classes: gelatinous and non-gelatinous dynamites. In the first class the nitro-glycerine is wholly or partly gelatinised by a percentage of collodion cotton. In the second, the nitro-glycerine is not gelatinised but is held in a dry combustible mixture. Among the chief products of the Somerset West works are blasting gelatin, which is the strongest industrial explosive made, being very quick acting and having a very violent and shattering effect. It is most suitable for very hard or refractory rocks. Gelignites of varying strengths, from 80 per cent. to 40 per cent., are made for mining, tunnelling and quarrying. Dynamites for coal mining and diamond mining are also turned out in large quantities, the chief variety being ligdyn of different strengths for use with medium rocks, sandstones, limestone shales, and non-fiery coal mines. Flameless explosives are also manufactured for fiery coal mines. These have all passed the British Home Office tests and are on the "permitted" list of explosives for fiery mines in South Africa and Australia.

Apart from the South African market, the Australian mines have largely availed themselves of the Somerset West product; and a special ship, the "South Africa"—owned by the company—makes regular sailings to that continent. In addition to the mining explosives the company makes a special "Capex" brand of subsoil dynamites for agricultural purposes, tree-planting, irrigation and ditching.

As the uses to which these explosives can be applied to assist the farmers are many and varied, the company has prepared special literature on the subject, which may be had on application by those interested. Here it may be mentioned that the company consumes all available cotton of South African origin suitable for manufacturing explosives, which fact well illustrates the interdependence and mutual value of local industries.

Glycerine Refinery.

An important adjunct of the explosives works is the glycerine refinery. It is the only refinery of its kind in Africa, and its importance, therefore, in war time can hardly be overestimated. Glycerine to the specification laid down by the British Pharmacopœia is produced for all medicinal purposes. Moreover, this product serves an essential purpose not only in connection with the making of explosives, but also in the manufacture of soap, foodstuffs, tobacco, etc., and as a binder for cement and rubber stamp inks for printers' ink rolls.

The Acid Works.

An essential constituent of the non-dangerous section of the explosive works is the acid works. Here are manufactured sulphuric, nitric and hydrochloric acids of the chemically and commercially pure varieties. The necessarily large supplies of sulphur have unfortunately still to be imported from overseas, and it may be hoped that South Africa—which undoubtedly can produce sulphur—will one of these days be able to supply all of this all-important mineral that may be required by local industries. At any rate the acids produced at Somerset West are of the first quality, and ample supplies are always available to outside consumers. The commercial sulphuric acid product is used for making carbonic acid gas for aerated waters, for tanning operations, for soap and candle-making, for oil refining, textile manufacture, iron and steel-making, metallurgical purposes and the making of fertilisers. Pure chemical sulphuric acid is also produced and is largely used for charging electrical batteries for all types of work. The various nitric and hydrochloric acids produced have also a wide range of valuable uses.

Allied to the explosive works is an extensive and highly efficient refrigeration plant, which not only suffices to meet the needs of explosive making but also supplies the whole works and surrounding districts with supplies of ice. Situated at a safe distance from the actual making of the explosives is a highly equipped testing station where exhaustive, delicate, and severely practical trials are continuously carried out with explosives. This station is equipped with costly and sensitive testing apparatus that can measure to a nicety the efficiency and condition of the various types of explosives.

The Manufacture of Detonators.

One of the most interesting branches of industry carried on at Somerset West is the making of detonators. This is a comparatively new line of activity, but the enterprise has already justified itself. The factory is capable of supplying all the needs of South Africa, and it is equipped with the "last word" in expeditious, labour-saving machinery and devices. Highly skilled workmen, with the aid of almost human machines, turn out in vast quantities, with automatic uniformity, the familiar copper containers. No less than ten separate, delicate processes are involved in the operation of converting or "drawing" the copper sheet into the cap or container as we know it; and no less than 100,000 containers can be completed in an eight-hour shift. The control of this section obviously involves skill and knowledge of a high order. Good detonators are, of course, essential to efficiency and safety in blasting operations, and the fact that South Africa has now its own works where they can be manufactured under the closest and most expert supervision is a factor of extreme importance. In addition to the manufacture of ordinary detonators, or blasting caps, this plant turns out electric detonators of different strengths for use in connection with the coal mining industry particularly, and general blasting purposes carried out on an extensive scale. In this connection it is noteworthy that the Cape Explosives people carry stocks of electric detonators, blasting machines, shot-firing cable, and all materials necessary for carrying out electric blasting—which, some people think, has not yet come into its own!

Dips, Sprays and other Chemicals.

The company specialises in the production of all chemicals required by the farmer and horticulturist in overcoming the many pests and diseases that retard progress in this country. Chief among these are sheep and cattle dips, orchard sprays and various other chemicals. The orchard sprays include such essential materials as sulphur lime tree spray, arsenate of lead, and Bordeaux mixture, while the list of chemical products includes ferrous sulphate, copper sulphate, Epsom and Glauber salts, sulphur for vines, and sheep dip, crude rock sulphur, "Capex" pure lye, sodium sulphide, and washing soda. These may be described as essentials of successful husbandry, and the fact that they are all produced in the country is of the utmost importance to the future of South African farming. It is claimed that all these products are manufactured to standard chemical specifications, under the supervision of expert analytical chemists, and that they are of guaranteed composition to withstand the most searching analytical examination. It is further claimed—and very reasonably so—that the enormous outlay involved in the enterprise necessitates the highest degree of efficiency in manufacture and ensures the production of only the best quality of materials. Of course the future of this side of the company's activity is bound up with the development of the agricultural industry of the country and in its own interest, therefore, its aim and endeavour is to produce only the best. In a word, service to the farmer is the guiding and controlling motive of the company's enterprise in this direction.

As already mentioned in connection with the work of the central laboratory, samples of all the raw materials used throughout the works are sent there for the most searching scrutiny and careful examination. Moreover, in the making of sheep and cattle dips local raw materials are used as much as possible. In conjunction with the works the company carries on mixed general farming on an extensive scale. Sheep, cattle, tobacco, and cereals and fruit sections are maintained and experimentation work and fruit trials are also carried out on large neighbouring fruit farms. The "Capex" sheep and cattle dips are too well known to require detailed description. Sulphur and lime are the essential ingredients of the type of sheep dip approved by the Governments of South Africa, Australia and America for the eradication of scab in sheep. The prevalence of this disease in this country costs the Union Government some £200,000 per annum and involves the whole sheep raising industry in incalculable loss. The active agent in an effective cattle dip is arsenite of soda. Certain other ingredients are added to ensure the mixture adhering to the hair and skin of the animal, to give "wetting" power so called and generally to render the compound dip absolutely effective for the purpose for which it is sold. "Capex" sheep and cattle dips are manufactured on the soundest and most approved scientific principles and have been proved by the most exhaustive tests by Government Departments and in practical operation to be absolutely effective.

Sprays.

It is the intention of the Cape Explosives Works, Ltd., to manufacture a complete chain of sprays for dealing with the insect and fungus troubles of the fruit grower. Some of these sprays are already on the market, and others only await the results of the necessary field trials. There is a special technical and scientific staff engaged on spray-production and investigation, supplied with current literature on this subject from all parts of the world. This new branch of the Cape Explosives Works, Ltd., has received invaluable help from the Department of Agriculture, and as far as possible their various sprays conform to the recom-

recommendations made in this Department's remedies and also charts. No effort will be spared to manufacture thoroughly reliable and efficient sprays, tested under South African climatic conditions and, with the support of the farmers, there should be no difficulty in considerably reducing the present heavy cost of spraying.

In the long list of other chemical products made by the company special mention may be made of lead nitrate, a substitute for lead acetate in the gold mining industry, and for use in other directions.

Some Subsidiary Industries.

Side by side with what may be described as the major industries of Somerset West flourish some half-a-dozen minor branches of activity worthy of brief mention. The policy of the company is to be self-contained as far as possible, and to that end have been set up printing works, paper bag-making works, wood and cardboard box and drum-making factories. All these are equipped with the most modern and expensive machinery and plant, and are manned by highly skilled experts in each particular line. Printing, which includes all the varied forms of wrappers and stationery required by such a vast organisation, is all done in the works, and the quality leaves nothing to be desired. All the drums and containers for the different products of the company are likewise turned out in finished style; and the paper, cardboard, and wooden receptacles of the company's products are all made on the spot. The result is, of course, most satisfactory inasmuch as the quality and efficiency of the several forms of container are thus safeguarded. Even the oiled or waxed paper essential for the wrapping of high explosives is made in the works, and alongside this branch of industry is growing up a promising paper bag and carton-making industry which bids fair to capture the whole South African trade. All these branches of production have, of course, even more than their obvious uses in so far as they serve to utilise the labour and power supplies of the company during periods of enforced temporary slackness in other departments.

Power Supply.

The power supply of such a great organisation deserves a word to itself. Naturally the power supply is centralised in one large station, the prime movers being steam turbines, which generate electric power for all the many purposes of the works. The power is distributed and transformed as required, and in addition to the works, the Municipalities of Somerset West and Somerset Strand are supplied.

Fertilisers.

The outstanding feature of the landscape at Somerset West is the mammoth new fertiliser factory which has only recently been completed. The new building, which is constructed of steel, is 700 feet long, 75 feet wide, and 80 feet high from floor to roof. The latter is wood and rubberoid, the sides and ends being closed with corrugated asbestos sheets. Crane rails laid at a height of fifty-five feet on either side of the interior support an electrically operated bridge crane weighing 67 tons, traversing the entire length of the building. From the crane bridge is suspended a big bucket or "grab" capable of taking up five tons of material. This "grab" does the main handling of the material. Power, compressed air and water are all supplied from the main factory some two miles away. Railway lines run into the building at each end, connecting with the rest of the works and the main railway system.

It should here be mentioned that the main line at Firgrove is connected up with every portion of the works by means of branch lines and sidings. Adjacent to the main fertiliser factory are the offices, boiler plant, chemical laboratories, bone plant, bag printing house, and change houses, the whole layout being planned to provide room for future expansion. The plant has a capacity of 100,000 tons of fertilisers per annum, or much more than the present total requirements of the Union. The capacity can be considerably increased at any time; and it is estimated that if the area of land under the plough in this country were fertilised in the same way as is done in England or Germany the requirements of the Union in fertilisers would be over a million tons per annum. The new fertiliser works aim to correct the anomaly that this country has been importing large quantities of grain and flour from oversea, and also large quantities of phosphatic fertilisers for such crops as are grown. The local manufacture of fertilisers of the best quality now makes it possible for the farmer to reduce his cost of production by increasing his yield of grain per acre through the use of these fertilisers, and this will also enable him to compete with the world in the price of grain. All the authorities are agreed that, owing to the almost general poorness of our soils in phosphoric oxide, the main need of the country is phosphatic fertilisers. In other words, there is what is described as a specific need of phosphoric oxide for our soil conditions and varieties of crops. It is admitted that though some of our soils may need lime, nitrogen and potash, the fertilising ingredient most wanted in South Africa is phosphoric oxide. It is mainly to supply this great and insistent demand that the new plant at Somerset West has been erected. It is claimed that this plant can deliver at any time and in any quantity the finished product, free from oversea price fluctuations. Uniformity of price and quality are thus ensured for the "Capex" products, and these factors are bound to have a most favourable influence on agricultural progress. The making of superphosphate is the most important division of the work of the new factory; and in this sphere the only competition on a large scale comes from Kynoch's works in Natal. At Somerset West it is the intention to supply the existing demand of some 60,000 tons of phosphatic fertiliser now imported from oversea, and ultimately to cope with a much augmented demand. Working three shifts the plant can produce 180,000 tons of superphosphate per annum, which entitles it to the distinction of being one of the biggest plants of its kind in the world. The raw material is represented by immense quantities of white crushed phosphate rock, imported from Christmas Island, near Java. This comes by way of Capetown in 4,000 to 5,000 ton cargoes and can be expeditiously off-loaded at the works. As much as 600 tons have been handled in six hours. Unfortunately the phosphates of South Africa, whether of Weenen or Saldanha, cannot be made use of for doubtless good and sufficient reasons. The composition of the imported rock is said to be excellent and well adapted for the making of high grade superphosphate. The first step in the process is the lifting of five tons of this coarsely crushed raw phosphate by the "grab" already described, which drops its load into a gyratory crusher. From here the fairly fine ground material is lifted by an elevator into ring roll mills where it is so finely pulverised that 90 per cent. will pass a 100-mesh sieve. This powder is then lifted by air suction into the dust silo attached to the outside of the main building. From the silo it is taken by worm gear and elevator to dust-weighing hoppers on the platform over the "den." Here is added diluted sulphuric acid—conveyed in pipes from the contact process and making works situated near the explosives section.

The very elaborate mixing process need not here be described in detail. Suffice it, that after three or four weeks the superphosphate is ready for bagging. It is first screened, then filled into the bags, all operations being done mechanically. The bags are printed and got ready in a special room and after being filled, weighed and closed are shot through a chute to the railway trucks below. In addition to this high grade superphosphate, the works also prepare, in a separate building, sterlised, finely-ground bonemeal. Other fertilisers are also stocked, such as basic slag, whale meat guano, sulphate of potash, nitrate of soda, and sulphate of ammonia. The building contains a unique set of machines for screening and mixing the various ingredients used for preparing the various "Capex" compound fertilisers. The works sell fertilisers for grain, maize, fruit and vine, cotton, sugar-cane, tobacco, potato, lucerne, etc. Samples of all fertilisers are continuously taken for control and analysed in the special chemical laboratory. In fine, nothing is left undone to ensure the high quality and absolute uniformity of all the products of this model factory.

General.

At one time in Australia considerable opposition was offered to the use of the products of the company on the ground that they were largely the product of cheap Cape coloured labour. The best answer to that lies in the fact that the works in normal times employ an average of no less than 500 white men, supplemented by 600 to 700 coloured. The company enjoys that very important if intangible asset, "a good name," with its men; and all are content to serve it faithfully and well in the assured and tried belief that it will watch over their interests both now and in the future. This spirit is evident everywhere throughout the works—in the trim gardens, the more than comfortable homes of the staff and married men, the recreation hall and club, and most of all in the manner and demeanour of the men themselves. All are out to make a success of the "Capex" products, and if good and conscientious workmanship allied to the best of materials and modern machinery can command success "Capex" should win through. Indeed it requires no great stretch of imagination to perceive that this snug but busy valley, set between the mountains and the sea, may one of these days radiate prosperity throughout the country and that the full development and expansion of its industries are only limited by the future of South Africa itself!

S. R. Potter

Explosives Manufactured.—Progressive Totals

The following statistics, abstracted from the reports of the Government Department of Mines, exhibit details of the manufacture of explosives in the Union during the past 10 years:—

Period,	BLASTING CARTRIDGES, Transvaal: c/s.	Cape- c/s.	Natal. c.s.	Total for Union. c/s.	DETONATORS, Transvaal. No.	Cape. No.	Total for Union. No.
Year 1911	256,627	427,541	208,627	892,795	—	—	—
Year 1912	256,304	422,158	237,252	915,714	—	—	—
Year 1913	272,606	407,097	230,080	909,783	—	—	—
Year 1914	249,555	348,465	208,595	806,615	—	—	—
Year 1915	238,392	358,495	229,119	826,006	—	—	—
Year 1916	277,379	413,280	240,119	930,778	—	—	—
Year 1917	273,829	472,689	180,799	927,317	—	—	—
Year 1918	245,654	381,024	198,967	825,645	—	—	—
Year 1919	200,691	383,440	207,120	791,251	—	—	—
Year 1920	253,306	395,361	217,543	866,210	4,301,620	15,751,900	20,053,520
Year 1921	270,032	359,311	125,848	755,191	10,422,045	22,523,400	32,945,445
1921—							
February	20,395	30,663	14,883	**65,941**	534,000	1,653,000	2,187,000
March	22,030	31,801	15,471	**69,302**	1,120,650	61,600	1,182,250
April	22,282	35,555	13,604	**71,441**	1,086,500	—	1,086,500
May	22,408	33,021	11,335	**66,764**	545,100	1,668,000	2,213,100
June	20,550	34,545	15,373	**70,468**	214,795	2,497,700	2,712,495
July	20,424	31,858	6,486	**58,768**	—	2,526,100	2,526,100
August	25,704	33,110	4,022	**62,836**	204,000	2,730,000	2,934,000
September	25,570	28,593	8,041	**62,204**	1,142,200	2,470,600	3,612,800
October	26,059	26,323	6,314	**58,696**	1,814,600	2,501,400	4,316,000
November	28,031	28,230	7,619	**63,880**	1,889,600	2,661,000	4,560,600
December	20,011	22,889	5,363	**48,263**	801,000	2,145,000	2,946,000
1922—							
January	22,183	19,660	5,851	**47,694**	665,000	1,780,000	2,445,000
February	8,153	304	5,211	**13,668**	438,200	846,000	1,284,200

Ammonia Compressors.

Amongst the many exceptionally valuable papers read at the seventeenth annual meeting of the American Society of Refrigerating Engineers, December 5-7, was that presented by George A. Horne, Mechanical Superintendent of the Merchants Refrigerating Co., New York. The *Refrigerating World* says that Mr. Horne's paper is admittedly one of the most valuable ones ever read before the Society. It will surely be referred to for many years as a great accomplishment and as forming a milestone along the road of success in the industrial application of mechanical refrigeration.

The value of this paper lies in the fact that owners and not manufacturers have taken the greatest pains possible to subject their machinery to a series of tests under varying conditions to make observations coming under 120 heads on each of eight tests, draw up complete head balances accounting for every heat unit supplied and abstracted during tests, submit indicator cards, and arrive at a curve that shows the brake horse-power required per ton of refrigeration, with absolute pressure ratios ranging from 4 to 1 to 11 to 1.

HEAD, WRIGHTSON & Co., Ltd.,
ENGLAND.

Manufacturers of all Classes of

COLLIERY PLANT

Headgears and Coal Screening Plants

MAKERS OF

- Headgears.
- Headgear Sheaves.
- Cages.
- Kep Gears.
- Stephen Humble Safety Hooks.
- Friction Driven Tipplers.
- Jigging Screens.
- Marcus Screens and Conveyors, etc., etc.

MAKERS OF

- Plate Picking Belts.
- Deflecting Jibs.
- Raising & Lowering Gears.
- Scraper Conveyors.
- Bar Picking Belts.
- Elevators.
- Creepers.
- Rotary Screens.
- Band Conveyors, etc., etc.

COAL WASHING PLANTS

Designs prepared and estimates submitted by

HEAD, WRIGHTSON & CO.
(SOUTH AFRICA), LIMITED.

64-66, Standard Bank Chambers, Johannesburg.
P.O. Box 1034. Telephone 3524.

Rose Deep Results.

1921 REPORT.

MR. BRETT'S SURVEY OF OPERATIONS.

During 1921 the Rose Deep made £127,794 net profit and paid out in dividends 105,000. A sum of £134,046 was brought into the accounts from the previous year, and £139,526 is brought forward from this. Mr. A. J. Brett, the consulting engineer, in the course of his annual report, writes: The following tabulation summarises the salient features of the work of the past three years: Tonnage milled, 1919, 604,900, 1920 643,600, 1921, 644,500; working costs per ton, 1919 19s. 2d., 1920 21s. 2d., 1921, 22s.; revenue per ton with gold at 84s. per oz., 1919 23s. 4d., 1920 21s. 5d., 1921 20s. 7d.; working profit per ton with gold at 84s. per oz., 1919 4s. 2d., 1920, 3d., 1921 (loss) 1s. 5d.; working profit with gold at 84s. per oz., 1919 £126,834, 1920 £8,002, 1921 (loss) £43,931; additional revenue represented by difference between 84s. per oz. and actual price realised, 1919 £71,315, 1920 £213,016, 1921 £168,838; total working profit, 1919 £198,149, 1920 £221,018, 1921 £124,907; development footage, 1919 5,214, 1920 7,050, 1921 7,077; ore in reserve (tons), 1919 3,031,280,, 1920 3,060,040, 1921 2,564,430; average value of ore reserve (dwts. per ton), 1919 5·2, 1920 5·1, 1921 5·2; average strength of coloured labour force, 1919 3,262, 1920 3,646, 1921 3,886. The profit earned from the operations of the company, which proceeded smoothly throughout the year, was £124,907, this being £96,111 less than was earned the previous year by treating practically the same tonnage. The grade was lower by 0·2 dwt. per ton milled, whilst working costs increased by 10d. per ton. The increase in working costs was largely due to increased reduction charges owing to alterations to the western or Rose Deep mill. These alterations became necessary owing to the decision to concentrate the whole of the reduction operations at this mill, and to cease operations at the Glen Deep mill for the time being, with a view to obtaining more economical treatment of the ore. The grade of ore obtainable from the mine is now so low that the margin of profit has become exceedingly small, and it is essential, in order to ensure the future of the company, that every effort be made to effect any and every reduction in operating costs that is possible. This can be readily understood when it is pointed out that with gold at its standard price and the working costs of the year, operations would have been carried on at a loss for the first time in the history of your company. As mentioned in your manager's report, certain small mining areas have been acquired from The Knights Deep, Ltd. (in liquidation), which it is considered will be advantageous to your company. During the year the pumping plant at the Lohse shaft of The Knights Deep, Ltd., was closed down owing to that company going into liquidation, and the joint pumping agreement was cancelled. Since, apart from any water that was made in the Rose Deep, the water made in the Knights Deep and Simmer Deep (both in liquidation) was bound to rise and endanger the workings of the Simmer and Jack Proprietary Mines, Ltd., and possibly the workings of your company, an agreement has now been entered into with the Simmer and Jack Company by which a joint pumping plant will be installed as soon as possible at its Rhodes shaft, with a view to handling this water, and the water from the Rose Deep previously handled at the Lohse shaft. The ore in reserve at the end of the financial year was estimated at 2,564,430 tons, having an average value of 5·2 dwts. per ton. The decline in tonnage and increase in value is largely due to the necessity of raising the pay limit to meet existing conditions.

Mr. T. P. E. Butt, consulting electrical engineer, has resigned from the service of the "J.C.I." group, and left this week for Trinidad. Before his departure Mr. Butt was entertained at several farewell functions by his numerous friends on the Rand.

Latest Industrial Census.

TOTAL VALUE OF OUTPUT, £93,000,000.

The fifth annual census of factories and workshops in the Union reflects steady progress in the Union. The value of articles produced and of work done by our factories and workshops in 1919-20 was nearly 93 million pounds sterling. An analysis of this figure shows that nearly 54 millions sterling was spent in the purchase of raw materials, 28½ millions worth of which was of South African origin. In addition, over 19 millions sterling was circulated in the country through the medium of salaries and wages to factory and workshop employees. These figures mean, firstly, that the sum of £93,000,000, less the cost of imported raw materials (25¼ millions)—namely, £67,600,000, was saved to the country in a single year, through the production locally of goods that would otherwise have had to be imported; and, secondly, that, of this sum, 47½ millions was circulated in the country through wage-earners and producers of raw materials, the balance being distributed to owners and shareholders of the businesses concerned. We have shown that, in 1919-20, over £19,000,000 was spent by factories and workshops in salaries and wages; of this sum, European employees received nearly 73 per cent. On the basis of the amount spent in wages, the five largest groups of industries are:—

Group.	Total Salaries and Wages, 1918-19.	Proportion Paid to Europeans.
1. Metal, engineering, machinery and cutlery works	£6,205,031	£5,319,077 (85·7 %)
2. House-building	£2,623,036	£1,691,443 (64·5 %)
3. Preparation, treatment, and preserving of food, drink, condiments, and tobacco ...	£2,497,203	£1,423,533 (57 %)
4. Books, paper, printing, and engraving	£1,193,018	£1,029,521 (86·3 %)
5. Heat, light, and power	£1,297,616	£1,084,812 (83·6 %)

It may be of interest to add that the group which paid out the greatest sum in wages to non-European employees was the one concerned with the preparation, treatment, and preserving of food, drink, condiments, and tobacco: £1,073,670. This was followed closely by the house-building group, which paid out £931,593. The average wage paid to Europeans in 1919-20 was £244, against £200 in the previous year; and to non-Europeans, £46, against £42 in 1918-19. The highest group average in the case of Europeans was £297 (Group IV.: Metal, engineering, machinery, and cutlery works); and the lowest, £128 (Group XV.: Leather and leatherware). The total value of articles produced and work done by the factories and workshops of the Union in 1919-20 was £92,913,844.

Box 3807. Tel. 5892.

WRIGHT'S ROPES

H. ALERS HANKEY - - - Sole Agent.

Geneva Conference.

MR. GEMMILL'S REPORT.

WORK OF SOUTH AFRICAN DELEGATION.

The report of Mr. W. Gemmill, who was the representative of the South African Industrial Employers at the International Labour Conference, held at Geneva in October, 1921, has just been published.

After explaining in detail the position of the International Labour Organisation, in which is embraced the annual conference, and dealing with the work of the various sections, Mr. Gemmill says:—

"It is true that, so far, very few of the decisions of the International Labour Conference have materially affected the South African industrial employers, due to the fact that in South Africa the conditions of European labour are much in advance of those in many other countries, and international labour legislation cannot go too far ahead of even the backward countries. In the future, however, assuming always that the League of Nations continues in existence, decisions of far reaching importance to South African employers may be come to at the conferences. As an example, I may mention the certainty that differentiation between races on account of colour is a matter which will come before the International Labour Organisation; it has already been tentatively brought up on several occasions. Properly directed, such a move might be of great value to South African employers in connection with the 'colour bar' question; while, on the other hand, an unsatisfactory direction might have disastrous effects."

Honour for South African.

Mr. Gemmill, who had the honour of being elected one of the four vice-presidents of the Employers' group—Viscount Burnham, proprietor of the London *Daily Telegraph*, was the president—states that "for once the employers' section was much better organised than the workers, arising from the fact that the International Organisation of Industrial Employers, which was established after the Washington Conference, placed at the disposal of the employers' group at the conference its bureau, which is occupied during the whole of the year in dealing with matters arising out of the International Labour Organisation."

The items on the agenda having a bearing on industrial conditions in South Africa were: (1) The prohibition of the use of white lead in painting; (2) the weekly rest day in industrial undertakings; (3) the weekly rest day in commercial undertakings; (4) the reform of the governing body. Commissions were appointed by the conference to deal with these items, and Mr. Gemmill was appointed a member of those dealing with Nos. 2, 3 and 4. He was also appointed a member of the Commission of Selection, which is really the Management Commission, and by far the most important commission of the conference.

Better as we are.

Referring to item No. 2, Mr. Gemmill says: "The convention on the weekly rest day in industrial undertakings has the unfortunate defect that it attempts to stereotype and bring under Government regulation a provision which has been generally brought into force in South Africa, either by voluntary action on the part of the employers or by agreement between the employers and employes' associations. The employers' group at the conference, and also the British Government representatives, voted against the convention, and I do not see any reason why it should be ratified by the Union Parliament, there being no necessity whatever for a law to be passed laying down in South Africa under rigid departmental conditions what is already satisfactorily in force in an elastic manner."

With regard to item No. 4, Mr. Gemmill explains that "this matter was placed on the agenda following the very strong protests voiced by Mr. Crawford and myself at the Washington Conference in regard to the overwhelming European representation on that body (no less than 21 out of 24 representatives being nominees of European countries). The reform now proposed is that, of the 12 Government representatives on the governing body, four should be from overseas countries; of the six employers' representatives, one at least should be from an overseas country; and of the six workers' representatives, one at least should be from an overseas country; that is to say, the overseas countries would have, for the time being, not less than six out of 24 representatives. The present governing body remains in office until October, 1922, the members to be then elected holding office for three years."

Tribute to Helpers.

In conclusion, Mr. Gemmill places on record his appreciation of the great assistance afforded him by Major R. D. Doyle. "A more courteous and helpful colleague," says Mr. Gemmill, "it would be impossible to find. This remark applies also to Mr. A. C. van der Horst, who was seconded by the Government as Secretary to the South African delegation. Mr. Van der Horst did everything possible—within the limits of the inadequate allowances granted by the Government—to facilitate the delegation's work at Geneva.

"As regards the South African Government and Labour representatives, it would be out of place for me to express my views on their activities. It is, however, fitting that I should record the fact that, whenever circumstances permitted it, the South African delegation endeavoured to act together as a unit in the interests of South Africa."

DR. C. F. JURITZ ON FERTILIZERS.

Dr. C. F. Juritz concludes his report to the Government on fertilizers as follows:—Of all the sources of fertilizers within the Union none is fundamentally more important than those which have within themselves the possibility of supplying soil and plant with phosphatic material; that is to say, bones and phosphatic rocks. Along with the nitrogen furnished by such articles as guano, the blood and meat meal of the abattoirs, or the products of the fisheries of various kinds, they give the soil just the very materials needed by cereals for formation of their seed. A matter for consideration in the case of phosphates is the form of chemical combination in which they are found, and there is no warrant for assuming that phosphate rocks in which the phosphoric oxide is combined with iron, alumina, or manganese, can benefit the growing crop to any appreciable extent except perhaps after many years subsequent to application. Potash again, the plant food constituent which is so essential where the formation of new material is proceeding in the plant, and so necessary for all root crops, and generally for crops containing much starchy or sugary matter, is to be found in Karroo ash and plant ashes generally, but, unfortunately, in the form of carbonate, which is distinctly deleterious where there is any tendency to brak in the soil. Large proportions of potash, ranging from 10 to near 40 per cent., are also present in the ashes of the common sea-bamboo, but one of the chief potential sources of potash in the Union of South Africa is the country's large wool industry. I have added the last paragraph as a kind of summary to my notes in order to indicate something of the functions of each of the plant food constituents of fertilizers. More cannot now be said on this phase of the subject, but what has been said ought to suffice to illustrate the point that fertilizers of different kinds are not interchangeable, and to show that various classes of waste products have each their own place and scope in the system of soil fertilization.

Finance and Information for Investors.

AN EXAMINATION OF BALANCE SHEETS AND REPORTS—DATA FOR SHAREHOLDERS.

In response to the request of numerous readers we have commenced a new feature of the journal. In these pages we shall endeavour to compress reviews and criticisms of balance sheets, to examine Government, Municipal and other loans, to note dividend declarations, to analyse new prospectuses, and to examine the financial results and prospects of mining, commercial and banking companies concerned with trade, industry and finance in the Union and Rhodesia.

"C.M.S." Annual Report.

The accounts of the Consolidated Mines Selection Co. for last year show an available balance of £77,113. It was decided to transfer from the reserve account to the credit of profit and loss account £100,000, and to write off £151,995 for depreciation, and to carry forward a balance of £25,117.

* * *

Globe and Phoenix Finances.

The report of the Globe and Phoenix Gold Mining Co. for last year shows a net profit, after bringing in a balance of £1,768, and transferring £10,000 from development reserve, which amounted to £103,899. Two interim dividends of 1s. were paid, and a balance of £23,889 was carried forward.

* * *

Vereeniging Milling Company.

The Vereeniging Milling Company has increased its capital from £50,000 to £300,000. The enterprise belongs to the Lewis & Marks group, and its gigantic grain elevators are a feature of the landscape at Vereeniging. The company is launching out in several directions connected with milling, such as maize oil extraction and other food products. Cheap power is, of course, available from the neighbouring V.F.P. station, and the industry seems assured of a prosperous future.

* * *

The Salisbury Loan.

Mention was made in this column last week of the Salisbury loan of £70,000 at 7 per cent. The loan is repayable on June 30, 1932, and has been even more successful than the most sanguine anticipated. The objects of the loan are: new electric generating plant, municipal abattoirs and other local improvements. Not only was it over-subscribed in about three hours, but applications continued to flow in from all parts of South Africa. The sum of £45,000 was subscribed in Salisbury alone, while a further £15,000 could easily have been obtained from local sources. The total amount applied for when the list closed was over £110,000. The response is most gratifying to town and country, as it reflects the utmost confidence in the stability of the efficient Municipality of Salisbury.

* * *

March Company Registrations.

The list of companies registered at Pretoria during March includes the following:—Thomas-Joe Gold Mining Co., Ltd., President Street, Barberton; capital £500. J. M. Shields, Ltd., Beresford Buildings, 86, Main Street, Johannesburg; capital, £15,000. G. H. Lewis & Co., Ltd., 71, Sherwell Street, Doornfontein, Johannesburg; capital, £250. Globe Potteries, Ltd., Dam Street, New Muckleneuk, Pretoria; capital, £1,000. J. Reichman, Ltd., 13, Sauer's Buildings, Loveday Street, Johannesburg; capital, £200. Central Timber Co., Ltd., 3, Rufe Naylor's Buildings, Eloff Street, Johannesburg; capital, £10,000. Brakpan Universal Suppliers, Ltd., 753, Hastings Avenue, Brakpan; capital, £1,000. Carlton Hoels (South Africa), Ltd., Sixth Floor, Consolidated Buildings, corner of Fox and Harrison Streets, Johannesburg; capital, £1,000. Bendigo Estates, Ltd., 40, Bussey Buildings, Loveday Street, Johannseburg; capital, £12,500. The Slidevertiser Co., Ltd., 21 and 22, Portland House, Commissioner Street, Johannesburg; capital, £5,000. Hefren, Ltd., 36, Eloff Street, Turffontein, Johannseburg; capital, £500. The Union Business and Estate Agency, Ltd., 1 and 2, City House, Harrison Street, Johannesburg; capital, £500. Boksburg Live Stock Dealers, Ltd., 24, First Street, Boksburg North; capital, £1,000. Jeanray Estate, Ltd., United Buildings, Fox Street, Johannesburg; capital, £5,000. Excelsior Products, Ltd., 47, Van Beek Street, Doornfontein, Johannesburg; capital, £1,000. Crittall Manufacturing Co. (South Africa), Ltd., 13, Loveday Street, Johannesburg; capital, £100. Fochville Milling Co., Ltd., 6, Loopspruit Avenue, Fochville, district Potchefstroom; capital, £1,500. The Transvaal Arcade, Ltd., 221 Mare Street, Pretoria; capital, £1,500. The Deep Sea Fisheries, Ltd., 222, Van der Walt Street, Pretoria; capital £500. Ball Hawke (Adelaide), Ltd., 31-39, Meischke's Buildings, Harrison Street, Johannesburg; capital, £12,000. Ball Hawke (Fort Beaufort), Ltd., 31-39, Meischke's Buildings, Harrison Street, Johannesburg; capital, £12,000. The Crocodile Trading Co., Ltd., 221, Mare Street, Pretoria; capital, £500. The Property and Agency Company, Ltd., 221, Mare Street, Pretoria; capital, £1,000.

* * *

New Natal Port.

Referring to the question of a new East Coast port, the *Natal Advertiser* announces that so far from the scheme being abandoned, it is still engaging the earnest attention of the Government in co-operation with the Railways and Harbours Administration. On the occasion of the recent land and sea surveys of Kosi Bay and Lake Sibayi it was too hastily assumed that one or the other of those places would be the site of the new harbour. According to the latest information, the Government's sole purpose was to exhaust all possibilities of the Natal and Zululand litoral, and absolutely assure itself that no suitable spot had been overlooked. The opinion is now held that the recent surveys have not revealed either Kosi or Sibayi in the light of places offering greater advantages than certain inlets previously considered, such as St. Lucia Bay and Saldanha River. Whatever may be the ultimate decision, it is believed that the new harbour, if created, will at first be purely a coaling port, its object being, firstly, to provide an outlet to which Natal coal can be more speedily and cheaply conveyed; and secondly, to relieve the congestion on the Natal main line from Glencoe to Durban, where too frequently coal trains and trucks hinder the general traffic of this important link between coast and up-country districts.

TO LET.

MODERATE RENTAL TO APPROVED TENANT.

Cottage, South Coast, Natal. Just completed. Built of concrete. Three rooms; large verandahs; glorious view; 200 yards from sea; safe bathing; 400 yards from railway halt.

Apply, "L,"
Office of this paper.

STRUCTURAL STEEL-WORK.

BUILDINGS, BRIDGES, ROOFS, TANKS, HEADGEARS, ETC

Sole Agents for HELICAL REINFORCING RODS.

Large Stocks of Steel Joists, Angles, Channels, Bars, Plates, etc.

Agents for the HARVEY ENGINEERING CO., LTD., Glasgow.

Illustrations show part of an incline gantry for the Delagoa Bay Coaling Plant, under Construction.

GILBERT HAMER & CO.,

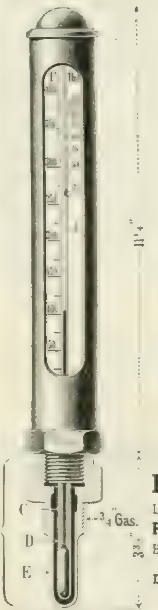
LIMITED.

Head Office and Works: CONGELLA WHARF, DURBAN.

Box No. 301. Telegrams: "Girders."
Telephone No. 872.

Johannesburg Office: ROYAL CHAMBERS, SIMMONDS STREET.

DAVIS-MADE THERMOMETERS



JOHN DAVIS & SON (DERBY), LIMITED.

☞

BRASS SHUTTER THERMOMETERS FOR AIR COMPRESSOR

☞

CHEMICAL THERMOMETERS IN BRASS PROTECTING SHEATHS, STEM DIVIDED. TEMPERATURES UP TO 600° FAHR. CAN BE SUPPLIED IN THE FOLLOWING LENGTHS, 6, 8, 10, 12 OR 14 INCHES

PRICES AND FURTHER PARTICULARS WILL BE GLADLY SENT ON REQUEST.

Sole Agents for South Africa:

BARTLE & CO., LTD.

Loveday House 'Phone 3553. Wires: "Faggot."

P.O. BOX 2466, — JOHANNESBURG.

Box 444, KIMBERLEY and Box 1228, DURBAN.

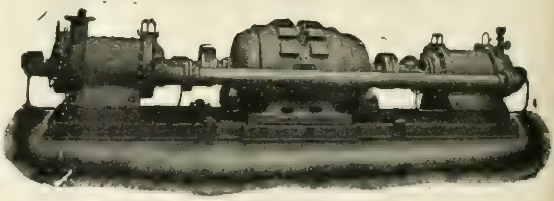
DAVIS-MADE MEANS HIGHEST GRADE

SULZER

HIGH-LIFT CENTRIFUGAL

PUMPS.

For Mine Drainage, Waterworks, Etc.



Pumping Set suitable for lift of 2,500 ft.

LARGE LOCAL STOCKS IN MEDIUM AND LOW-LIFT PUMPS.

For particulars apply to:

RICE, WILSON & HERD,

86, 87, 88, 96, Standard Bank Chambers, Commissioner St

P.O. Box 930 Telephones 2299 & 2300. JOHANNESBURG.

Also South African Agents for

CALLENDER'S CABLE & CONSTRUCTION CO., LTD.
BRITISH THOMSON-HOUSTON CO., LTD., etc., etc.

The Week in the Sharemarket.

BUYING FROM LONDON—ENCOURAGING INDICATIONS—DEMAND FOR SIMMERS—NEW MODDERS ADVANCE.

The market continues to be dependent on London and advices from that quarter have, during the week, shown a distinctly hardening tendency. Not only have oversea orders been received and executed here, but local dealers have taken a gamble on Home quotations, buying shares here and cabling them for sale. In the majority of cases business has been done to advantage both ways; this is a most encouraging feature and shows that Kafirs are receiving some attention from the other side. Should this state of affairs continue, the floating stock on the local market will be absorbed at an early date and shortages may be looked for.

As we have already pointed out, the return of interest in Kafirs is not without basis; the fall in working costs must bring millions of tons of ore into the zone of payability, and thereby give a new lease of life to the Rand.

In some quarters the fall in the gold premium is much feared, but we are inclined to think that this is no cause for anxiety—in fact, we are of opinion that a gradual fall in gold to standard value would be beneficial, inasmuch as it would eliminate the present speculative existence of all classes. Amongst the opportunities offered, the investor will be able to sift the corn from the husk of the Rand gold mining industry; and we venture to express the opinion that careful study will bring forth lucrative results in this direction.

There has been a continued local demand for small stock, the outstanding feature being Simmer and Jack, many thousands of shares having been absorbed here on selling orders from London. Diamonds have been extremely quiet, though Crown Diamonds latterly showed fluctuating activity.

A very encouraging feature has been the marked demand from London for our better class shares. New Modders have witnessed a substantial advance during the past few days.

	Fri. 7th.	Sat 8th.	Mon 10th	Tues 11th.	Wed. 12th.
Anglo-Amer. Corp	20 6	20 7½	21 0	21 4½	21 3
Apex Mines	6 4*	6 3*	6 9	6 6*	6 3*
Aurora Wests	2 9*	2 9*	2 9*	2 6†	
Bantjes Consolidateds	6 4*	6 4½	6 4*	6 6	6 4*
Brakpan Mines	46 6*	47 0*	47 6*	47 6*	84 6†
Brick and Potteries		3 0*		3 0*	—
Bushveld Tins		0 7†	0 7†		0 7†
Cinderella Cons.		2 6*	2 3*	2 3†	2 3*
City and Suburbans		2 2	-	2 2	2 2
City Deeps	42 0	42 9	42 3*	43 0	42 6*
Con. Diamonds	14 0	14 6	15 0	15 0	14 10½
Con. Investments	23 3	23 0	23 0	23 6	23 3
Con. Langlaagtes		15 0*	--	15 6	—
Con. Main Reefs	9 9*	10 0*	10 0*	10 0*	10 1½
Con. Mines Selection	12 9*	13 0		13 9†	13 6*
Coronation Collieries	30 0*	31 3*			
Coronation Freeholds	0 8*	0 9*		0 9*	-
Coronation Syndicates	5 0	5 0	5 0	5 0	5 0*
Crown Diamonds	5 9*	5 6	5 9*	6 6	6 3*
Crown Mines	36 0*	36 10*	37 0*	37 0	
Daggafontein Mines	2 8*	2 9	2 8*	2 8*	2 9
East Rand Coals	1 6*	1 6*	1 9†	1 9†	1 6*
East Rand Deeps	0 9*	0 9	0 10*		0 10*
East Rand Minings		10 0*	10 0*		10 0*
East Rand Proprietary		6 6*	6 3*	6 6*	6 9
East Rand Debentures		£82*		£82*	£85†
Eastern Golds	0 6*	0 6*		--	0 6*
Frank Smith Diamonds	3 8	3 9	3 9*	3 9*	3 9
Geduld Props.	54 3	54 0	54 3	54 3	54 6
Geldenhuis Deeps	6 0*	6 3*		10 3*	
Glynn's Lydenburgs	10 6*	10 6*	10 6*	11 0*	11 6*
Government Areas	79 3	79 [illegible]	79 6	80 0	80 6
Hume Pipes	11 6*	12 0*			11 9*
Johannesburg B. of Ex.	32 6*	32 6*	32 6*	32 6*	
Knight Centrals	4 2*	4 2*	4 3*	4 5	4 4*
Lace Props.	7 6*	7 9*	7 9*	8 0	8 3†
Leeuwpoort Tins	6 9*	6 10	6 9*	6 9*	6 9*
Luipaardsvlei Estates	2 3*	2 6*		2 6*	- -
Lydenburg Farms	4 8*	4 8*	4 9*	4 9*	4 9*
Meyer and Charltons				60 6*	60 0*
Middelvlei Estates	1 8*	2 0†	1 9*	1 8*	—
Modder B.'s	28 9	28 6*	28 9	28 6	28 6
Modder Deeps	41 10½	42 1*	42 6	42 3	42 0
Modder Easts	8 9*	8 10	9 0	8 9	8 6
Natal Navigation Colls	30 0	30 9*	31 0	31 0*	31 0*
National Banks	200 0*	220 0b	220 0†	220 0†	
New Era Cons	6 0*	6 0*	6 3*	6 4½	6 1*
New Geduld Deeps	1 1	1 1	1 4	1 5	1 1
New Kleinfonteins	6 4*	6 6*	6 8	6 6	6 7
New Modderfontein	69 3	70 6a	69 6	70 3	71 3
New Primrose	5 6	5 0*		5 6*	
New Unifieds	4 9*			4 6*	4 9
New State Areas	28 6	28 6	28 3*	28 3*	28 3
Nigels			6 0	6 0*	6 3*
Nourse Mines	11 6	11 4½	11 6	11 6	11 6
Pretoria Cements	42 0*	42 0*	42 0*	41 6*	41 6
Princess Estates	1 2*	1 2*	1 0*	1 1*	1 1*
Rand Collieries	1 1*	1 0*			1 0*
Rand Nucleus	1 0*	1 2	1 1*	1 1*	1 1*
Randfontein Centrals	**10 0***	**10 3***	**10 6***	—	**10 6***
Randfontein Estates	15 0	16 0	16 0	16 0	15 10½
Rouxville Diamonds	1 6*		1 5*	1 5*	1 5*
Rooibergs	3 0*	3 9†	3 9†	3 9†	3 9†
Ryan Nigels		3 3*	3 3*		3 0*
Rose Deeps			10 6*	10 0*	12 0*
Simmer and Jacks	3 6*	3 6b	3 9*	3 9*	3 6
S.A. Lands	4 2*	4 3*	4 2*	4 5	4 5
Springs Mines	38 6	38 0	38 0	38 6†	38 3
Sub-Nigels	11 6*	11 6*	12 0	11 6*	11 6
S.A. Alkali	**14 0**	**13 9***	**13 9***	**14 0†**	**14 0†**
S.A. Townships	8 6*	8 9*	8 9	8 6	8 3*
Transvaal Lands	17 3*	17 6*	17 0*		-
Trans. G.M. Estates	8 0*	8 0*	7 9*	7 9*	7 9*
Transvaal Silvers	19 6	19 0*	19 0*	18 0	17 3
Tudors	0 6*	0 6*		0 6*	0 6*
Van Dyks	1 0*	1 0*	1 0*	1 3†	1 3*
Van Ryn Deeps	61 6*	62 0*	62 0*	62 3*	62 0*
Village Deeps	9 3	9 0*	9 0*	8 9*	
West Springs	9 6*	9 9		8 9*	9 6*
Western Rand Estates	3 9	3 10½b	3 6	-	4 0
Witbank Collieries	38 6	38 9	38 0*	-	
Witwatersrand Deeps	10 6	10 6*	10 6*		10 6*
Zaaiplaats Tins		2 6†	2 3*		2 5
Union 5 per cent.	£102*	£101½*	£101½*	£102*	£102
Tweefontein Collieries	15 0*	-	-	16 0*	18 0†
Wolhuters	3 3*	3 3*	3 3*	3 3*	3 3*

* Buyers. † Sellers. a. Odd lots. b. Ex London.

Irrigation.

The annual report of the Director of Irrigation to the period ended March 31, 1921, is of more than usual interest. We hope to print extracts from it in future issues. In his introduction, the Director refers to four general features of the year which have had a considerable effect on the work of the Department: (a) The market value of farm produce experienced a sudden fall from the high prices previously obtaining; (b) the effect on the irrigation farmer in some parts was aggravated by the absence of good floods; (c) the price of materials for construction and of labour generally reached the highest peak; (d) money for construction purposes has not been obtainable cheaply. As a consequence of (a) and (b) difficulty has been experienced in getting in repayments of loan moneys from farmers. As a consequence of (c) and (d) works which had already been sanctioned have been held back and only one new major loan was approved of by Parliament. He adds: "This pause in new construction activity is a suitable time to survey briefly some of the work of the past and see how we can profitably apply the experience gained in the future when the time is ripe for a more vigorous programme of work. Generally, it may be said that the adverse experience has been very similar to that of America during its earlier years of irrigation development. On page 257 of my book on 'Irrigation and Settlement in America,' I have summed up three outstanding results of such experience in that country, and they are: (a) The cost of irrigation works has generally proved to be more than the estimate; (b) there has been a tendency to over-estimate the area which a limited water supply can properly irrigate; (c) where repayments are due to Government there has been difficulty in getting them in, particularly the first repayments."

PALMETTO PACKING

Rests upon the Solid Foundation of Quality.

[illegible]

[illegible] that it's this unusual quality that causes [illegible]

"PALMETTO" is a practically frictionless packing, as it carries an unusual quantity and quality of graphite grease lubricant keeps the rod perfectly lubricated.

[illegible]

[illegible]

BARTLE & CO., LTD.,
JOHANNESBURG.
E. W. TARRY & CO., LTD.,
[illegible]

PRICE'S
CANDLES
(Made in South Africa)

FOR
MINING
AND
GENERAL USE

Burn Brightly & Economically

PRICE'S (South Africa) LIMITED
FACTORIES: CAPE TOWN & JOHANNESBURG
HEAD OFFICE: BATTERSEA LONDON

EXPLOSIVES
FUSE
DETONATORS
ACIDS
CHEMICAL PRODUCTS
SHEEP DIP
CATTLE DIP
ETC., ETC.

CAPE EXPLOSIVES WORKS, Ltd.
P.O. DYNAMITE FACTORY,
SOMERSET WEST, C.P.

Telegrams :
"NIVONIA," Johannesburg.

'Phones :
2196,—2197,—2198

J. & R. NIVEN, Ltd.,
ENGINEERS,
CONTRACTORS,
MERCHANTS.

BALATA BELTING
JAMES DAWSON & SON, Ltd.
BITUMEN SHEETING
GEO. M. CALLENDER & CO., Ltd.
BOILERS
PENMAN & CO., Ltd.
COAL CUTTERS AND CONVEYORS
JEFFREY MANUFACTURING CO.
COLLIERY PLANT
CAMPBELL, BINNIE, REID & CO.
DRILL STEEL
JOHN NICHOLSON & SONS, Ltd.
ENGINES, LOCOMOTIVES
ANDREW BARCLAY, SONS & CO., Ltd.
ELECTRIC LIFTS
A. & P. STEVEN, GLASGOW.
CRANES
BUTTERS BROS., GLASGOW.
HOSE, VALVES, SHEET RUBBER
THE LEYLAND & BIRMINGHAM RUBBER CO., Ltd.
LUBRICANTS
THOS. HINSHELWOOD & CO., Ltd
STEEL SCREENING
THOS. LOCKER & CO., Ltd.

Barsdorf's Buildings, Marshall Street,
JOHANNESBURG.

TRADE AND INDUSTRIES SECTION.

Week in the Mining Material and Engineering Trades.

BUSINESS QUIET BUT CHEERFUL—BIG FUTURE FOR LOW-GRADE PROPOSITIONS PREDICTED—IRON AND STEEL INDUSTRIALIST ON TRADE UNIONISM—TIMBER AND BUILDING MATERIALS—ELECTRICAL GOODS—UNION'S IMPORTS FROM BRITAIN, 1913 AND 1921—OILS—HUME PIPE EXHIBITION AT THE SHOW.

General.

The holiday season, together with the turmoil caused by the Agricultural Show, has militated against any extensive business operations this week, and things have been rather quiet and dull. The feeling of hopefulness is, however, even more accentuated than before, and steadily improving conditions month by month are confidently looked forward to, with possibly a substantial business recovery after the end of the half-year has been passed. This does not seem to be too sanguine a prospect in view of the lower production costs which are now being introduced by the gold and coal mining industries, and which should enable us to work the majority (if not all) of our low-grade propositions at a fair profit. Indeed, in the opinion of some optimsits, most of our present so-called low-grade mines will, in the course of a year or two, be looked upon as relatively rich ones, in comparison with some of the properties which are now being pegged out on the western portion of the Rand, and which with an extraction of a few dwts. it is predicted will pay well to work. At any rate many individuals are backing their opinions to-day by pegging out claims on areas which but a few months ago were looked upon as quite outside the pale of payability, and rightly so, under pre-strike mining conditions.

A leading commercial man thought that the exploitation of Luipaardsvlei No. 10 was a very hopeful sign for the immediate future of the gold mining industry, and would prove the saviour of the country, leading, as it was bound to do, to very extensive working on the western part of the reef during the next one or two years. He thought that the Western Estates, which is a huge concern, would now shortly begin to work in earnest and follow up the Luipaardsvlei No. 10 proposition, and that in respect of both east and west of the Rand there would be some wonderful things to report soon.

The outlook for the future is undoubtedly regarded as very encouraging, and although, as was to be expected, the business now going is rather small, the inquiries from outside districts and from Rhodesian centres for mining goods point to increased activity in the course of the next few months. We seem at long last to have turned the corner and to be on the right road to commercial prosperity.

The losses announced so far by the different gold mining corporations are, of course, very serious, but not so serious as was expected by many. They will naturally make a big hole in the forthcoming half-year's dividends, but it is generally expected that the results of the second half-year will restore things more or less to the previous standard.

There are no changes in prices to report this week, which remain steadily firm.

The Conference at Genoa is the cynosure of all eyes at present, which is not surprising in view of the very important issues which are expected to be settled by it. A very great deal, said an important merchant, depends on the results achieved at this latest Conference. Undoubtedly the whole commercial world is watching and awaiting the outcome of the very difficult problems to be discussed and, he hoped, satisfactorily settled. Upon the result of the Conference, he said, we should be able to see what kinds of goods would be stabilised.

Witwatersrand Agricultural Show.

The exigencies of going early to press again this week preclude, unfortunately, any detailed reference to the record exhibits this year, but in our next issue we shall have something to say regarding the more important and interesting displays. It is sufficient to-day to say that the Show has proved itself an unqualified success both as regards exhibits and attendance of the public.

Iron and Steel.

Wholesalers have been rather quiet this week, nor has the Commercial Exchange exhibited the activity witnessed during the previous fortnight, inquiries being not so numerous. But the undercurrent is cheerful and good business conditions are confidently expected within a reasonable period, as soon as the industry gets into its stride and

Robert Heath & Low Moor, Ltd.,
Sole Manufacturers of
LOW MOOR
IRON AND RIVETS.

SPECIALITIES:
COLD BLAST PIG IRON
HAULAGE GEARS
PUMPS
WINDING ENGINES
OVERWINDING GEARS
PIT TUBS
COLLIERY PLANT AND BUILDINGS
AXLES AND FORGINGS
DROP STAMPINGS
CHILLED AND GRAIN ROLLS
CASTINGS UP TO 20 TON EACH

SOLE AGENTS IN SOUTH AFRICA FOR PRODUCTS OF
LOW MOOR WORKS:
SAMUEL OSBORN
(S.A.), LIMITED,
'Phone 4573 JOHANNESBURG.

CLIMAX DRILLS

A Speed Contest and the Joburg III.

IN one of the many Mines where Climax Drills are in use the Joburg III was doing good work.

But somebody came along with another drill, and claimed for it that it would work 50% faster than any drill in the mine.

So it was set to work alongside the Joburg III . . . . and this is what happened:—

Somebody's Drill did 6 holes in 5 hours.

The Joburg III did 7 holes in 4½ hours.

The conditions were identical—but Joburg III was a *better* drill.

It's all in the build of the Drill. *Climax Sam*

Joburg III is a Cradle Hammer Drill for wet or dry drilling, with automatic rotation and screw feed. Fitted with the famous little spool type valve.

THE CLIMAX ROCK DRILL & ENGINEERING WORKS LTD
4 Broad Street Place London E.C.2. Works:- CarnBrea. Cornwall.
[illegible]

(INCORPORATED IN GREAT BRITAIN)

Local Address: **49, STELLA BUILDINGS,**

Corner Rissik and New Streets, —— JOHANNESBURG.

P.O. BOX 4256. —— Telegrams: "THUMBSCREW." —— Telephone 2794.

the mines again come into the mining material market for supplies, which, in the opinion of competent judges, cannot now be much longer deterred. As was anticipated a little while ago, some lines of mining requisites are becoming scarce; plates, 8 by 4 by ½, are at present unobtainable and have risen practically within a week from 19s. to 30s. per 100 lb.—an indication of what is likely to happen in other lines, as for many months past, of course, merchants have refrained from indenting, nor have bank facilities been in favour thereof. Purchasers therefore may in the near future see the market firming up against them

Latest Quotations.—Dunswart iron, 22s. per 100 lb. basis price; Union Steel Corporation, Ltd., 25s. basis; imported iron and steel, flats, rounds and squares, from 28s. 6d. to 35s.; channels and joists, 30s. to 32s. 6d.; imported angles, 32s.; smaller sizes, 33s. 6d.; tee iron, 32s.; shafting, ½ in. down to 3-16 in., 7½d. to 9d. lb.; ⅝ to 1½ in., 6½d.; 1¾ in. to 6 in., 5½d.; steel plates, 1-16, ⅛, 3-16, 23s. 6d.; 10 x 5 and larger, 25s.; spring steel, 7½d. to 8½d. lb.; bolts and nuts, hexagon, round, ⅜, 8½d. to 9¼d. lb.; ½ in., ⅝ and ¾, 40s. to 45s. per 100 lb.; hexagon nuts, ⅜, 8½d.; ½ in., ⅝ and ¾, 7½d.; fish plates, bolts and nuts, ⅜ in., 8d. lb.; ½ in., 6d.; ⅝ in., 5½d.; ¾ in., 5d.; dog spikes, 35s. per 100 lb.; rivets, ¼ in., 11d.; ⅜ in., 9d.; ½ in. and ⅝ in., 37s. 6d. to 40s. per 100 lb., ⅝ in. 50s.; brass rods, ¼ in. 1s. 5d.; ⅜ in. 1s. 3d.; ½ in. 1s. 2d.; ⅝ in. upwards, 1s. 1d. per lb.; hexagon brass rods, 1d. lb. extra; copper rods, ⅜ in., 2s.; ½ in., 1s. 11d.; ⅝ and upwards, 1s. 9d. lb.; tool steel, 2s. 11d. to 3s. 3d.; brass sheets, 1s. 10d. to 2s. lb.; copper sheets, ¼ in. to 18 gauge, 1s. 10d. lb.; 20 gauge, 1s. 11d.; 22 gauge to 28 gauge, 2s. lb.; firebox copper, 2s. lb.; copper tubes, ¼ in., 3s. 3d.; ⅜ to ⅝ in., 2s. 6d.; ¾ to 4½ in., from 2s. to 2s. 4d. lb.; phosphor tin, 2s. 11d.; ingot tin (Lamb & Flag), 2s. lb.; ingot lead, £28 per ton; drill steel, 6½d.; hollow, 9¾d.; 1¼ in., 9d. to 10½d.; wire nails, 30s. to 35s.; shovels, 30s. to 40s. doz.; wheelbarrows, 40s.; picks, 37s. 6d. to 50s.; pick handles, 19s. 6d.; hammer handles, 14 in., 7s. 6d.; 18 in., 9s. 6d.; 24 in., 13s. 6d.; 30 in., 17s. 6d.; 36 in., 25s.; barbed wire, "Shorthorn," 69 lb., 13½ gauge, 22s. per coil; plain galvanised fencing wires, No. 8 gauge, 100 lb. coils, 20s. to 22s. per coil; No. 10 gauge, 100 lb. coils, 25s. per coil; No. 12 gauge, 100 lb. coils, 26s. 6d. per coil; bulb tee fencing standards, 14 lb., 24s. 6d. per dozen; 12 lb., 23s. 6d. per dozen; black baling wire, 14 gauge, 19s. per coil, 100 lb.; 12 gauge barbed wire, 22s. per coil, 96 lb.; plain wire, No. 8 galvanised, 21s. per coil, 100 lb.; fencing standards, 12 lb., 20s. per dozen; screening, 3s. to 9s. 6d. per sq. yd.; cyanide, 1s. 7½d.; zinc shavings, 1s. per lb.

Second-hand Machinery.

The second-hand machinery market is still very firm, and although very few orders have come in during the past week, dealers are very hopeful of doing good business very shortly. The fashion to-day amongst those with a little money is to form syndicates to work some of the dumps along the Reef and take up claims out west on the southern areas. Some of these have been opened up and show marvellously rich returns. These people are arranging for the purchase of machinery by forming syndicates, so that before long it is hoped many of these small mills will be working along the Reef, thereby removing a good many of the out-of-works at present in our midst. All this means good business to the second-hand dealer in machinery. The mines are, of course, not yet working up to full pitch, and consequently are using from their present supplies, but there is no doubt when they are in full working order there will be a lot of orders for machinery and spares. There is a demand for tube mills, which now are the coming factor for the recovery of gold with crushing machinery, which will eventually do away with batteries.

Engineering Shops.

There is a more settled feeling abroad—a feeling of slow but gradual improvement taking place

An Industrialist's Views on Trade Unionism.

In conversation this week with the senior partner of a leading engineering works, he said General Smuts had asked the public generally, and industrialists particularly, to do their best to facilitate the return of things to normal, with a view primarily to diminishing unemployment. The peculiarity of the situation is, he said, that we all know that just as soon as distress and unemployment cease the same conditions of strike-cum-revolutionary happenings will immediately again become fashionable. Looking facts squarely in the face, in the light of past experience, it seems simply suicidal for industrialists to go out of their way to restore a condition which, as things are, will inevitably give birth again to the horrors we have just passed through. It is a callous, cruel theory which says the only way to industrial peace in South Africa is by preserving an unemployed army of potential strike-breakers, and he, for one, by no means advocated it. Nevertheless, self-preservation is just as highly a developed instinct in the capitalist as in the workman, and if that instinct in the workman leads to perpetual strikes, riots and sacrifices to hundreds of innocent lives, it does not seem any the more brutal if, for his own self-preservation, the capitalist decides that perpetual unemployment is the surest and only means to that end. The only other alternative, he thought, is for far-reaching and drastic legislation to be passed, making strikes, etc., an offence against the State; such legislation, of course, to provide enactments in our laws and machinery for enforcing such enactments, to ensure that wages and general conditions of employment be at least as good as in other parts of the world. It is useless and ridiculous, he said, for the public to be gulled and lulled to sleep again by the absurd parrot cry of "Sane Trade Unionism." Trade unionism cannot bury its head in the sand, or in the grass, and blame its extremist members for every evil it gives birth to. Extremist members are to be found in every human organisation, but the real test of such organisation is whether or not its extremist members are kept in control, and we all know that such has never been and never will be the case. Drastic legislation is the only panacea, and General Smuts must listen to the echo of his own call and restore satisfactory conditions to our country in the only way feasible or even possible—Parliamentary legislation. He was himself perfectly sure that the industrialist, although he may not proclaim it, and indeed may deny it, is not such a bedlamic fool as to go one step out of his way to again re-arm and re-provision his hereditary enemies—and enemies at every point they undoubtedly prove themselves to be.

Engineering Dispute in Britain.

There is a remote hope, according to the latest reports from London, that a settlement may still be arrived at in this matter, but the outlook at the time of going to press is not a very bright one.

Timber and Building Materials.

Generally business in timber has been on the slow side this week, with fewer inquiries, but prices remain very steady. Home quotations are very firm, and the probability

ASBESTOS
PROPERTIES and FIBRE
ARE PURCHASED BY
AFRICAN ASBESTOS MINING CO., LTD.
P.O. Box 504, BULAWAYO
Telegrams: "Safasco," Bulawayo 'Phone No. 356
Johannesburg Correspondents:—HUGGINS & CO., LTD.
Consolidated Building ———— JOHANNESBURG
Telegrams: "Turbros" P.O. Box 5185 'Phone 574

s that coal prices may go higher rather than lower. The building trade has been fairly active since things have more or less settled down after the recent trouble, and the prospects are encouraging for good and improving conditions after the holidays.

Timber prices: 9 x 3 deals, 1s. to 1s. 1d.; scantlings, 11d.; beaver boards, 4¼d. to 4½d.; floorings, 6¼d. to 6½d.; ceilings, 4¼d. to 4½d.; Oregon, 5s. 6d. to 6s. 6d. a cube; pitch pine, 7s. 6d. to 8s.; corrugated iron, 8¼d. Furniture timber: Burmah teak, 17s. 6d. per cube here for first quality, 14s. 6d. for second at the coast; American oak, 1 in., 10½d.; 1½ in., 11d.; 2 in., 11½d., at coast; and Japanese oak, 1 in., 1s. 1d.; 1½ in., 2 in., 1s. 2d., at coast; West African mahogany, 1 in. to 4 in. thick, 26s. 9d. to 27s. 6d. per cube at coast; Rhodesian mahogany, 9s. per cubic foot at mills; Honduras mahogany, 30s. per cubic foot; American yellow pine, 1s. 6d. per foot of 1 x 12 here; American pine shelving, 10½d. per ft.; 3 ply wood, 3 m.m. up to 5 m.m., alder and birch, 4d. to 6½d. per sq. ft.; oak and teak, 3-ply, 11d. per sq. ft. Prices for bricks remain unchanged at: Klompje bricks, 25s. per 100 at works; fire bricks, £10 per 1,000 at works; mixed, 70s.; wire-cuts, £4 10s. to £5, and £5 for pressed per 1,000, at kilns; columns from 20s. to 30s., according to size; roofing tiles, Marseilles, £25 per 1,000 at the works; chimney pots, 12 in., 7s. 6d.; 15 in., 9s.; 18 in., 10s. 6d.; lead oxide, 16s. per 100 lbs.; white lime, 7s.; unslaked, 10s. 6d. per 180 lb. bag; 8 lb. bag, 1s.; blue lime, 4s. 3d.; blue plaster lime, 5s. 3d.; cement, 11s. 6d. a bag; damp course and roofing, 36s., 54s. to 55s. for 1 to 3-ply.

Second-hand Timber and Iron.

Dealers report a slight improvement in business, with more inquiries for material. Stocks are still scarce; iron is ruling at 5d. to 6d., timber at 8d.

Blue Building and Plaster Lime.

Business has been quiet in this product, mainly due to curtailment in the building trade and affairs generally; whilst it is felt that there is still a scarcity of houses and although materials have reached a very low price, people intending to build have found finances very difficult. This does not do away with the fact that the country is certainly growing, and it is only a question of time before there is sure to be a building revival. Blue building lime is selling at 4s. to 4s. 3d. and blue plaster lime at 5s. to 5s. 3d. per bag delivered. In some quarters it is considered that prices are not likely to go down, and possibly may go up, owing to manufacturers finding that the policy of cutting prices has put some of them in a rather precarious position.

MAGNOLIA
ANTIFRICTION METAL
"FLOWER" BRAND.

TRADE MARK

HAS THE LOWEST CO-EFFICIENT OF FRICTION.
KEEPS down the bill for lubricants, making **BEARINGS** smooth as glass and keeping them **COOL** under heaviest pressures and highest speeds.
Manufactured and Sold By—
THE MAGNOLIA ANTI-FRICTION
METAL CO. OF GREAT BRITAIN, LIMITED.
49, QUEEN VICTORIA STREET, LONDON, E.C.
Agents for South Africa: FRASER & CHALMERS, Ltd., Johannesburg.
Bulawayo and Salisbury

Electrical Goods.

Business in electrical wares is quite good at present, and a big improvement is expected within the next month or two. Inquiries are starting again from all outside districts, and things in town generally are brisker; an important dealer said the signs were most encouraging. Prices remain practically unchanged, but wire and tubing have gone up at Home, and the increase is likely to be reflected here shortly. Consignments are coming in freely, but Continental material is still lagging behind.

Union's Imports from United Kingdom, 1913 and 1921.

The President of the Board of Trade states that the value of exports from Britain of produce and manufactures to South Africa during 1921 was £29,808,000, compared with £22,184,000 during 1913.

Oils.

Britain has granted the Standard Oil Co. exporting rights in Palestine.

A New York message states that the Sinclair Consolidated Oil Corporation announces that the Portuguese Government has granted permanent oil rights over 70,000 acres in Portuguese West Africa to the Companhia de Petroleo de Angola, which will be financed and worked under the management of the Sinclair Company. The fields are described as likely to surpass Mexican and Persian oilfields.

The Hume Pipe Co. at the Agricultural Show.

In the Machinery Hall the Hume Pipe Company have secured a stand near the main entrance, on which they display the various articles which they are manufacturing. The Hume reinforced pipe is, of course, well set out, the floor stand being paved with the company's special concrete slab. Various types of building blocks have been built up, to show the effect when built, and in addition numerous articles are displayed, such as concrete pillars, both plain and polished, of red and grey granite, imitation klompje fireplaces, vases and pedestals, and balls and pedestals, imitation rock placed piers, etc. The whole show, practically speaking, is confined to the company's special departments, with the exception of a few exhibits of Hume pipes, which are now so generally well-known that they do not require advertising so much as the company's special lines, some of which have been mentioned, and which are bound to attract more attention than on previous occasions. The company's exhibits form a very interesting and attractive display.

Gates.

An interesting exhibit is made by Mr. L. Lazarus (the sole agent) of some locally made and very ornamentally wrought iron garden and driving gates, which are being manufactured here at the following very reasonable prices: 3 ft. gates, £3 10s.; 3 ft. 6 in., £3 15s.; 4 ft., £4; 8 ft., £8; 9 ft., £9 10s.; 10 ft. gates, £10 15s. This exhibit, both on account of its novelty and the low prices asked, has attracted much attention on the part of visitors to the Show.

Busy Man's Page.

Owing to the necessity of going to press early this week, our Busy Man's Page is unavoidably held over till next week.

The Week's Meetings.

CORONATION SYNDICATE MEETING

Reconstruction Scheme Approved.

Luipaardsvlei No. 10 a Very Rich Property.

A Tribute to the Directors.

A special meeting of shareholders of the Coronation Syndicate, Ltd., was held at Bettelheim's Buildings on the 7th April, to consider and adopt resolutions for the reconstruction of the Syndicate. Mr. G. Sonn presided. A total of 210,000 shares was represented.

CHAIRMAN'S SPEECH

The chairman said:

Gentlemen.—This meeting has been convened for the purpose of considering and adopting resolutions for the re-construction of this Syndicate.

You are aware that we have been successful in obtaining from a number of influential firms and investors in London and Paris contracts to underwrite £100,000 cash, the whole of which will be offered to shareholders for subscription. We shall therefore be enabled to conduct sinking operations on Luipaardsvlei No 10 and develop the reefs.

It is well known that the financial conditions in London as all over the world have been in a very chaotic state, and it has been an exceedingly difficult task to induce people there to subscribe working capital for mining propositions in South Africa or elsewhere. Notwithstanding these great difficulties, Mr. Harry Graumann, M.L.A., one of your directors who visited England for that special purpose, succeeded in obtaining the underwriting of the £100,000 to which I have just referred.

Chief Features.

Mr. Niven, the acting Chairman in my absence, at the last annual meeting held on the 17th December, 1921, gave a full resume of the Syndicate's work since the present directors took control, but I might recapitulate the principal features:—

We hold 1,000 claims on the Far East Rand near Balfour. In these the Modder reefs have been proved in two shafts and are of payable value. We hope at a future date either to work this mine ourselves or float it off as a separate company.

We have some investments, legacies from the former control. They are 15,821 shares out of a total capital of £89,600 in the Afrikander Proprietary Gold Mines, Ltd., situated in the Klerksdorp district.

We are participants to the extent of £7,777 plus interest in a bond for £35,000 and hold 15,583 shares out of an issued capital of £85,000 in the Machavie Gold Mining Company, Ltd.

The Afrikander mine has now been tributed to a group of experienced the mine on tribute with the option of re-construction; these negotiations have not yet been completed. I have no doubt that ultimately some if not all of our money invested in this concern will be recovered.

Then we own the freehold farm Zonnestraal in the Heidelberg district in extent 277 morgen.

The Principal Asset, Luipaardsvlei.

Our principal asset, however, is the option to take over the mining lease on Luipaardsvlei No. 10, in the West Rand, next to the Randfontein Mines, the acquisition of which you are asked to-day to confirm. We have proved by boreholes that this farm contains the Randfontein Series of reefs at a reasonable depth. Borehole A, although not successful in striking the payable Randfontein reefs, supplied very valuable data. In Borehole B we got the West Reef of the Randfontein Series at 770 feet giving the very satisfactory gold content of 10·4 dwts. over a stoping width of 48 inches. In Borehole C we struck the Randfontein Leader at 832 feet, giving the very high assay result of 30·8 dwts. over a stoping width of 48 inches. With the results of these boreholes before us it was considered advisable to sink another borehole (D), which is now down 604 feet, with the idea of locating a favourable position for sinking the shafts. During this week the same upper reefs as in borehole C have been passed through.

Great Potential Value.

It is unnecessary for me to further dilate on the great potential value of this property. The results of the boreholes speak for themselves. The new money which the re-construction scheme put before you to-day provides will enable us to sink one or even two shafts to the reef and to do a certain amount of development. If, as there is no reason to doubt, the rich results of the boreholes are confirmed by development, there should be no difficulty in raising the additional funds necessary for further development and equipment and for bringing the property to a profit-earning stage. In fact, should the shares to be granted under option to underwriters and shareholders be taken up, the Syndicate's funds will be augmented by no less a sum than £300,000.

I have been connected with a considerable number of mining propositions on the Witwatersrand during the last 34 years, but I cannot recollect ever having had to submit to shareholders a more promising venture than your Syndicate has in Luipaardsvlei No. 10.

To cut reefs in two boreholes out of three put down assaying 10·4 dwts. and 30·8 dwts. respectively over a stoping width of 48 inches indicates, as we anticipated it would, that this farm is a very rich property indeed.

I do not think I am unduly optimistic in predicting a very prosperous career for the Company, as not only have we proved two rich reefs in our own property, but the values are supported by the assay results of our neighbours, the Randfontein Company, at great depth. Further, we have proved the reefs at such a comparatively shallow depth as mining men and there is every reason to hope that the percentage of gold which will accrue to the Company will ultimately give a fair return to the shareholders. This Company had on the 30th June last £9,188 cash on hand

For the Machavie mine several offers have been received to treat the rich tailing dumps of over 200,000 tons on a percentage basis and perhaps to work to make the venture a sub-outcrop one, with all the advantages of such a proposition as to largely reduced initial cost of shaft sinking and development as well as ultimate cost of working, as compared with the costly deep levels of the Far East Rand.

Under the Gold Law your Company will be entitled to a mynpacht of 20 per cent. of the area of the farm of 3,205 morgen, which equals 641 morgen, or 923 reef claims—an area extensive enough to carry a very large reduction plant, especially as the reefs in this area are steep and the reef contents per claim very much greater than on the East Rand, where the reefs are much flatter.

In addition, there will be a grant for a further number of discoverers' claims by way of reward for the successful boring operations.

Under the Mineral Leases Act it will be possible also to secure additional ground from the Government on profit-sharing terms.

For all the assets to which I have referred, shares to the value of £380,000 are to be issued, and with the £100,000 cash provided the capital will stand at £480,000 in five shilling shares—surely a very moderate capitalisation, being £40,000 less than the present capital.

Shareholders will receive one five shilling share (fully paid) for every pound share held at present.

Shareholders will also be entitled to subscribe for ten new shares of five shillings each at the price of five shillings per share for every thirteen shares now held by them. For all such shares subscribed shareholders will be entitled to an option on a similar number of shares at the price of 7s. 6d. per share, such option expiring 28th February, 1924. In addition, shareholders may apply for, at 5s. per share, the surplus shares not applied for (if any), and any such shares so allotted will also carry options on the same terms.

Since the notice convening this meeting was issued, the Board of your Company has been approached by some large shareholders who point out that the provision that options can only be exercised between the 2nd and 28th February, 1924, is too restrictive and not in the best interests of option holders, whether they be shareholders or underwriters. Your Board agrees with this. You will therefore be asked to authorise the Board to-day to modify this provision so that instead of the options only being exercisable between the 2nd and 28th February, 1924, they may be exercised at any time up to the 28th February, 1924, upon giving one month's notice.

Influential London Support.

I am sure you will be interested to know that the following gentlemen have agreed to join the London Committee on completion of the re-construction scheme: Lieut.-Col. F. E. Fremantle, M.P., Sir Herbert Trustram-Eve, K.B.E. (of Messrs. J. R. Eve & Sons, Westminster), Mr. H. C. Walrond (Chairman of Messrs. G. T. Symons & Co., Ltd., London).

Should the resolutions to be submitted to you to-day be approved, and after the confirmatory meeting to be held on the [illegible] of this month has taken place, [illegible] will be duly [illegible] and [illegible] to enable them to apply for [illegible] in the near future.

The first resolution to be submitted to you is that adding to Article 31 of the Company's Articles of Association, which will enable the Syndicate to pay a cash commission to the underwriters of the [illegible] per cent. [illegible] [illegible] [illegible] meeting.

The other formal resolutions giving effect to the scheme outlined by the chairman, [illegible] as set out in the notice convening the meeting, were carried unanimously.

Mr. Edgar M. Hyman said that as a very old shareholder of this company he wished to say that it was with very great pleasure that he had heard the chairman's speech at the opening of the meeting, and also these resolutions. There was one great feature in connection with this company, which was worth mentioning. As a rule when one went to England to find money for a South African company one had to go up to town and tell all manner of tales to get their money out of them. It was a unique feature in connection with this company that certain gentlemen came themselves, not mining men but engineering men, who knew all about engineering, to see this property before they were asked to put their money into it. So no one could say afterwards to these big underwriters that they were [illegible] down, as they were more than pleased with what they saw. So it was a very great feature with this company that the underwriters put their money in with their eyes open, and did not rely upon reports and promoters' reports. Therefore, I think we have a chance of a very successful future, and a vote of thanks should be given to the directors and to Mr. Harry Graumann for getting a real live asset for the company.

Colonel J. Donaldson congratulated the directors on the success of their courageous efforts in the Luipaardsvlei No. 10, in taking up the well considered views of the engineer; and the work done there seemed to have proved conclusively the correctness of his views. He also congratulated the directors on the success of their efforts, and particularly Mr. Graumann, in securing the provision of cash capital to bring this venture at Luipaardsvlei to such a stage, and the terms and arrangements by which the shareholders can participate in the provision of this money. He would think that now mining operations on the Rand have the atmosphere cleared by improvements from the labour point of view, and considering the moderate depth at which they had their mine, they might look forward to a very great future for the company, particularly when one saw the very satisfactory values disclosed. Their thanks were due to the directors.

The chairman said he was very glad to hear from the shareholders that they were satisfied with the work the directors had done. It was only in the last three years that the syndicate had come to life again, and they hoped this new life would continue for many years, and would be very prosperous. They would go on and carry through the work to the best of their ability.

UNION CORPORATION, LIMITED.

(Incorporated in the Transvaal.)

NOTICE IS HEREBY GIVEN that the Ordinary General Meeting of Shareholders in Union Corporation, Limited, will be held in the Board Room, 94 Main Street, Johannesburg, Transvaal, on MONDAY, MAY 29th, 1922, at 11 a.m., for the following purposes:—

1) To receive and adopt the Directors' Report and Accounts for the financial year of the Company ended on December 31st, 1921.

2) To appoint a Director in the place of Sir Carl Meyer, Bart., who retires in accordance with the provisions of Article 104, and, being eligible, offers himself for re-election.

3) To appoint Auditors in the places of Messrs. Price, Waterhouse & Company and Messrs. F. W. Diamond & English, who offer themselves for re-election, and to fix their remuneration for the past audit.

(4) To transact any business which under the Articles of Association may be transacted at an Ordinary General Meeting.

Holders of Share Warrants to Bearer, wishing to attend or to be represented at the meeting must produce or deposit their Share Warrants at the Johannesburg Office of the Company at least fourteen clear days previous to the time of the meeting, or at the London Office or Paris Office at least thirty days before the date of such meeting, together with a statement in writing of the name and address of the holder and the distinctive numbers of the Share Warrants. For Share Warrants so produced or deposited a Certificate will be issued, entitling the holder to attend and vote in person or by proxy at the meeting in the same way as if he were a registered Member of the Company. The Share Warrants deposited in Johannesburg will be released at any time after the meeting, and those deposited in London or Paris will be released twenty days before the meeting.

By Order of the Board,

VERNON J. RONKETTI,

Secretary.

94 Main Street,
Johannesburg, Transvaal.
April 7th, 1922.

Bethlehem Oils.

A notice in our last issue gave the essential official particulars regarding the Bethlehem Oils, Ltd., which is incorporated under the laws of the Transvaal Province. The directors are all well-known business men, and the consulting engineer is Mr. E. H. A. Cohen, M.A.I.M.E., who has had valuable experience with oil properties in North America. The capital of the company is £40,000, in 160,000 shares of 5s. each, and the object of the venture is to prove the oil-bearing qualities of a group of farms in the Bethlehem district of the O.F.S., where liquid oil occurrences have been discovered and favourably reported upon by well-known engineers. Copies of these reports can be seen at the company's offices, 5 and 6 Goodman's Buildings.

RHODESIAN TEAK & MAHOGANY

FOR MINING & BUILDING PURPOSES,
ANT, ROT AND DAMP RESISTING.

Sleepers, Guide Blocks, Deals, Scantlings, Flooring (Machined for Secret Nailing) and all kinds of Purpose-Made Joinery, Fencing Posts, Etc.

PRICES MODERATE.

RHODESIA NATIVE TIMBER CONCESSIONS,

35, PERMANENT BUILDINGS, HARRISON STREET,
JOHANNESBURG.

Box 5530—Phone 3568—Yard: Eloff St. Extension

Save
90 per cent.
of your
Friction Losses
by using
SKF
Ball - Bearing -
Wheel Trucks.

THE SKEFKO (S.A.)
BALL-BEARING Co., Ltd.,
HEAD OFFICE:
68, Commissioner Street, Johannesburg.

**S.K.F. Conquers Friction.
Always Specify S.K.F.**

Sole Agents:
ROGERS-JENKINS & CO.,
Johannesburg - Cape Town - Durban - Port Elizabeth

**4810
AIR HOSE**

ITS COVER is built to more than withstand all the punishment to which air hose is subjected. Its tube is made of the best oil-resisting compound yet developed. It is the most flexible when new, and will remain flexible longer than any other pneumatic hose made.

United States Rubber Co. (S.A.), Ltd.
(Late India Rubber Products Co. (S.A.), Ltd.)
Old Standard Bank, 65, Commissioner Street.
'Phone 4201. Tel. Add.: "IRPCOSA." Box 4945.
JOHANNESBURG.

**Prove the worth of
4810 by installing
several lengths on
your work.**

—o—

CAPETOWN AND DURBAN

SOUTH AFRICAN ENGINEERING WORKS AND FOUNDRIES.

ESTABLISHED 1888.

Wright, Boag & Co.
LIMITED.

ENGINEERS
AND
FOUNDERS.

Offices: 6, Troye Street (foot of Frederick Street),
Works: Marshall's & City and Suburban Townships.

Telephones: 1056 and 1057.
P.O. Box 545.
Tel. Add. "SWIVEL."

JOHANNESBURG.

P.O. Box 3960. Telephone No. 877.

W. H. BATTEN
(Late BATTEN & EDGAR).

The RAND BOILER, TANK
:: and IRON WORKS. ::

Trucks, Steel Cyanide Tanks, Chimneys, Cones, Skips, and all Mining Plate Work a Speciality.

Office and Works: Albert, Gold, Durban and Nugget Streets, City and Suburban.

Austral Iron Works.

ENGINEERS
AND
FOUNDERS.

Special Metal for wearing plates for Tube Mills and Centrifugal Pumps.

Machine Cut Gears in Raw Hide or any Metal a Speciality. And in Cast Iron up to 18 feet diameter.

Sole Agents and Manufacturers of Tregaskis' Drill Heating Furnaces.

E. W. TARRY & Co., Ltd.,
Anderson and End Streets,
JOHANNESBURG.
Phone 149. Box 1098. Tel. Add.: "Austral."

'Phone 154 Central. P.O. Box 11, Denver.

DENVER ENGINEERING WORKS
(Chisholm Stevenson & Co., Ltd.)

MAIN REEF ROAD, DENVER

ENGINEERS, BLACKSMITHS, BOILERMAKERS,
STEEL, IRON AND BRASS FOUNDERS.
MINING MACHINERY OF ALL DESCRIPTIONS.

Structural Steel Work, Haulage Gears, Tanks, Trucks, Cones, Skips, Cases, Screening Plants, &c., for Coal Mines.

CRUCIBLE STEEL CASTINGS
In Manganese or other Alloy. Analysis & Test Guaranteed.

LOCOMOTIVES AND TRUCKS OVERHAULED.
FORGINGS IN IRON AND STEEL.

Christopher & Shillito, Ld.

General Engineers.
Iron and Brass Founders, Steel Structure Contractors.

Importers of Steel Plates, Joists, Channels, Angles, Tees, Pig Iron, Etc.

Manufacturers of the C. & S. Disintegrators.

Designers and Manufacturers of Complete Cold Storage Installations up to a Capacity of 160 tons Refrigeration per 24 hours.

COPIES OF THE
SECOND SPECIAL
COAL NUMBER
of the
"South African Mining and Engineering Journal."
Published July, 1921, are still obtainable from the Publishers, - - Box 963 Johannesburg.

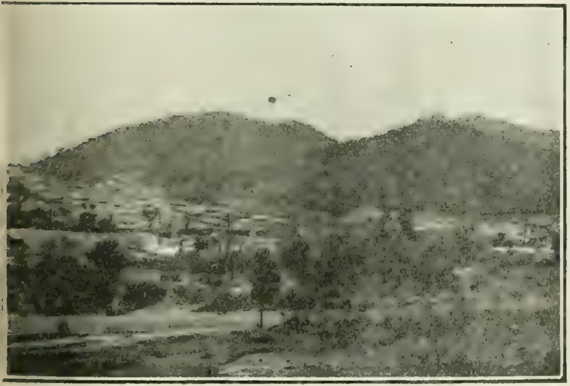
PRICE 5s. -- POST FREE.

All about Asbestos.—The Barnato Group.
How Metals derived their Names.

The South African
Mining & Engineering Journal
THE ONLY WEEKLY MINING PAPER IN THE CONTINENT OF AFRICA.
Established 1891.

Vol. XXXIII., Part I. JOHANNESBURG, TRANSVAAL, SATURDAY, APRIL 22, 1922. No. 1595.

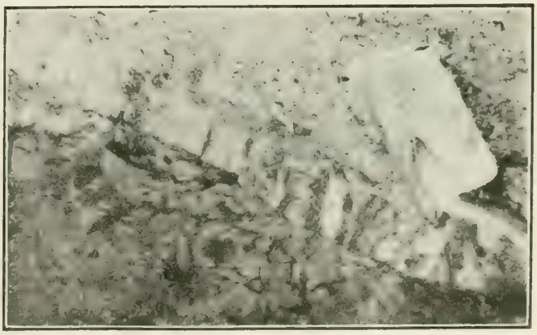
Scenes on the Asbestos Mines.



The Shabani Asbestos Mine, Rhodesia.

Another scene at Shabani.

At the Amianthus Asbestos Mines, Kaapsche Hoop. Photo exhibits the " calico " or " bacon " rock structure.



A " face " in the Chrysotile Deposits at Kaapsche Hoop.

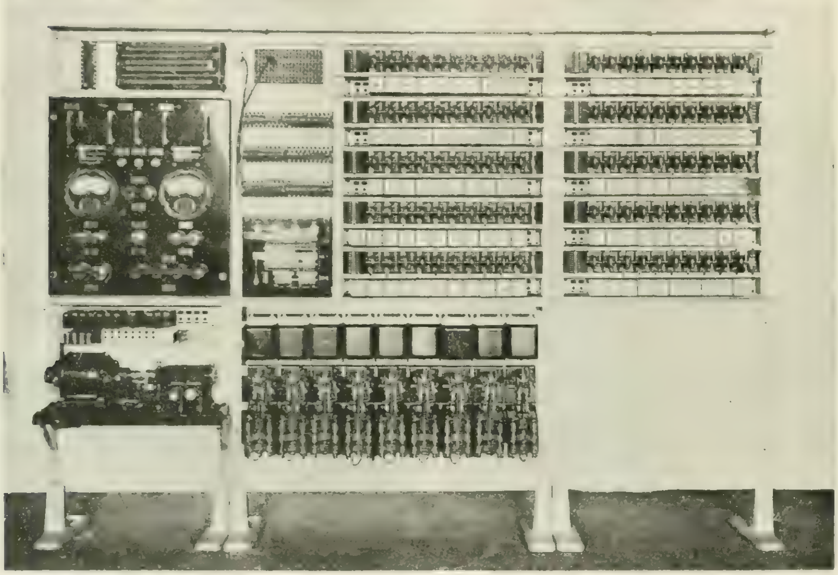
Southern Africa's asbestos industry is expanding, and an important article in this issue discusses the latest developments in regard to this important branch of our mineral activities.

SIEMENS BROTHERS

AUTOMATIC TELEPHONES

In addition to a number of
PUBLIC EXCHANGES FOR LARGE TOWNS
we have supplied scores of
PRIVATE AUTOMATIC EXCHANGES

Our EXPERIENCE is wide—Our SATISFIED CUSTOMERS numerous



PRIVATE AUTOMATIC EXCHANGE BOARD 100 Working Lines

CHEAP TO MAINTAIN—SIMPLE TO WORK

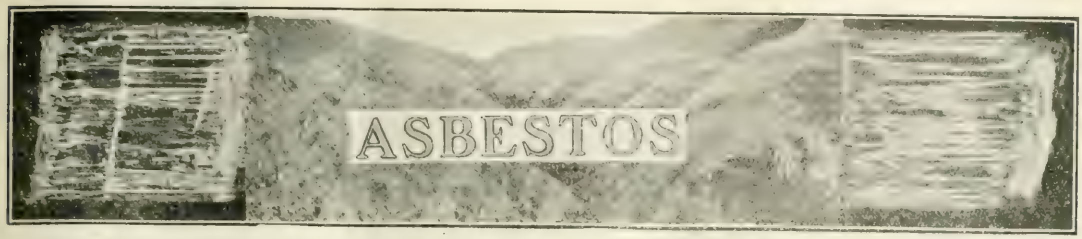
IMMEDIATE DELIVERY FROM LOCAL STOCK

Representatives in South Africa:

A. J. G SIMPSON, A.M.I.E.E.
African Life Buildings, 85, St. George's St.,
CAPE TOWN.
P.O. Box 239 Cape Town. Telephone 1202 Central.

G. H. B. BERNARD, A.M.I.E.E.
9-10, Cotts Buildings, Rissik and Fox Sts.
JOHANNESBURG.
P.O. Box 7404 JOHANNESBURG. Telephone 408 Central.

Telegrams: "SIEMENS"



Southern Africa's Coming Industry.

A REVIEW OF RECENT DISCOVERIES AND DEVELOPMENTS—CANADIAN INTERESTS ENTERING THE FIELD?—EXPANSION OF RHODESIAN OUTPUT—OCCURRENCES IN THE UNION—THE KAAPSCHE HOOP FIELDS—THE AMIANTHUS MINES—AN EXPANDING INDUSTRY.

It may not be generally known that highly influential interests in the Asbestos world are now moving in Rhodesia and the Union of South Africa. Already such important firms as Turner Brothers, of Rochdale, Bells, and others have associated themselves with the asbestos industry. De Beers have for long been virtually controlling the asbestos mining industry in the Western Cape Province, and that "Napoleon of Finance," Mr. Edmund Davis, in association with the Gold Fields group and Sir Abe Bailey, has in the Rhodesian General Asbestos Mines at Shabani and Mashaba propositions which rival the blocks of the African Asbestos or "Turner" group, or, for that matter, any other asbestos properties in the world.

Canada Wakes Up.

But now from all we can gather fresh figures are beginning to appear on the scene and are "out" to make a big bid for a large portion of this expanding and new branch of Southern Africa's mineral activity. Whether these new entrants into the field are consumers or producers we cannot say. We strongly suspect, however, that they are both and, according to reliable information, they have already captured a good deal of the South African market in asbestos mines, and have bought out one of the hitherto dominating asbestos groups operating in the country. They are looking for promising properties all over the sub-continent. As to their identity nothing definite can be said at the moment, but we may hint at the possibility of the new arrivals being closely connected with the asbestos industry of that other great Dominion of the British Empire which produces the bulk of the world's asbestos output, and in this business has now—since the Russian fields became subordinated to the Soviet—only one large competitive rival—Southern Africa.

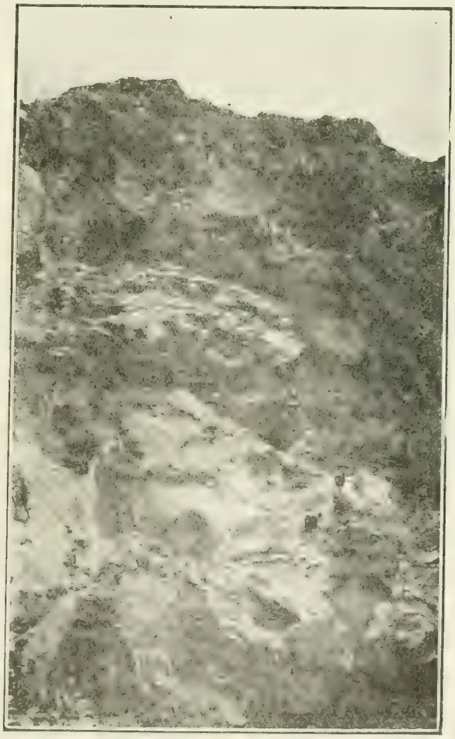
The Rhodesian Fields.

Southern Africa indisputably is increasing in importance as a producer of asbestos. By far and away the largest proportion of this output is derived from Rhodesia. Southern Rhodesia has, in fact, become the second largest asbestos-producing country in the world, its output being exceeded by Canada alone. Asbestos has been discovered at several widely-separated points—at Shabani, on the Sabi River, in the Belingwe area, at Mashaba, in the Victoria district, in the Umvukwe Hills, in the Lomagundi area, where deposits of chrome and asbestos are being exploited by the British Chrome and Asbestos Company, at the Peake's property, about 30 miles from Banket Junction, around Belingwe, and also, so it is reported, in the Bubi district. The two first-named fields, Shabani and Mashaba, are, however, by far and away the most important and at present produce practically 100 per cent. of the asbestos output of the country.

The two principal concerns operating in the Shabani and Mashaba districts are the African Asbestos Mining Co., Ltd., owners of the Nil Desperandum Mine at Shabani, and the Balmain at Mashaba, and the Rhodesian and General Asbestos Corporation, Ltd., owning the Shabanie Mine at Shabani and the Gath's Mine at Mashaba. In the Shabani area the Willoughby's Consolidated Company has produced substantial quantity of asbestos from the Birthday block of claims.

Growth of Production.

A serious falling off in production of asbestos in Rhodesia was noted during 1918, the total being 8,574 tons. In 1919, however, a recovery took place in the latter part of the year, the output for the year amounting to 9,798 tons. There was a large increase in value, but part of the reported increase was due to adjustments on values declared in previous years. The following table shows the rapid growth of production:—



A big working face at the Nil Desperandum Asbestos Mine, Shabani, Rhodesia.

Year	Value
1913	£5,221
1914	8,612
1915	32,190
1916	99,059
1917	189,890
[illegible]	158,684
1919	125,240
[illegible]	159,572
1921	795,699

Union Occurrences.

[illegible] the Prieska fields important occurrences of asbestos are widely distributed over a considerable portion of the Union of South Africa. In their geographical [illegible] extend from the Prieska district into [illegible] of [illegible], and large areas producing an [illegible] of fibre are situated at such widely situated localities as the Zoutpansberg, the Lydenburg district, and near Kaapsche Hoop in the Barberton field. There are too occurrences in the Carolina area, and in Natal, but the discoveries so far made in the latter province do not appear to be comparable in importance with those of the Transvaal and the Western and South-Western Cape Colony.

As to Swaziland, we learn that an important discovery of chrysotile recently has been made in the neighbourhood of Steynsdorp, and that indications point to the likelihood of important developments being secured in connection with this proposition in the near future.

South African Outputs.

In the Union of South Africa the value of asbestos produced and sold during the last decade has been as follows:—

1911	£10,839
1912	18,882
1913	16,028
1914	20,087
1915	35,899
1916	83,070
1917	87,364
1918	54,037
1919	66,426
1920	114,195
1921	103,067

South African Deposits.

The extensive deposits of asbestos in South Africa have produced a considerable tonnage of fibre for the past 26 years. Production has been chiefly of blue asbestos or crocidolite from Cape Colony, and chrysotile asbestos from the Transvaal and Natal. The "Cape blue" asbestos is mined chiefly by the Cape Asbestos Co., but lately some other companies have operated in the northern section of the deposit. It is claimed that the blue asbestos requires special treatment to prepare it for consumers and, in order to build up a market for blue asbestos in the United States, a new corporation associated with the Cape Asbestos Company, and known as Consolidated Asbestos, Ltd., has recently been incorporated under the laws of New Jersey. An important feature of the South African industry is the recent production of "amosite," a ferrous amphibole with or without soda, and somewhat similar to crocidolite, though its colour is ash grey to pale brown. A notable characteristic of the material is its fibre length, which reaches a maximum of 11 inches. The product from one deposit averages 6 inches in length, and is said to be of good spinning quality. "Amosite" occurs over an area 60 miles in length and three miles wide along the Olifants River in the Transvaal. It was discovered in 1907, and commercial production began about 1916. The supply is evidently great and an increasing market for the fibre is to be expected. There has recently been important development of an amosite property in Seccocoeniland and output is increasing.

Another important Transvaal enterprise is the New Gloria mine, which is situated 45 miles to the west of Waterpoort Station on the railway line between Bandolier Kop and Messina. This property is now owned by a local company with a capital of £30,000. The company has produced large quantities of asbestos and with further plant would be able to undertake very large production. Substantial shipments have been made to the United States. The occurrence of asbestos at the New Gloria property is remarkable and is only comparable with the deposits owned by the Danville Asbestos Mines, Ltd., near Quebec. Another Transvaal asbestos property which has produced fair quantities in the past is the Penge Mine in the Lydenburg district, and amongst registrations of companies to deal with asbestos in Southern Africa during the last year or two may be mentioned the Khosis Asbestos and the "New Biltong."

The Kaapsche Hoop Fields.

One of the most interesting developments in connection with Transvaal asbestos is taking place in the Barberton district, near Kaapsche Hoop, where several promising occurrences are being exploited. Chief among these are the occurrences on the farm Joubertsdal, where the Amianthus Mines, Ltd., are developing what appears to be a very extensive and valuable series of chrysotile occurrences. The Amianthus Mines Co., although it has only engaged in serious mining operations for about six months is stated to have 25,000 tons of asbestic rock in sight in an area which does not represent more than one-tenth of the property. Moreover, the drives have only penetrated for a comparatively short distance into the serpentine belt of what is known as the Jamestown series lying in the foothills of the great Drakensberg escarpment above the De Kaap Valley. The asbestos workings on Joubertsdal lie in the south-western corner of the farm and west of the main creek that traverses it from south to north, but the asbestos line continues eastwards across the creek into the adjoining Government ground. The total length over which fibre has been located at intervals is in the neighbourhood of three miles, including both the Joubertsdal workings and those of Messrs. Myburgh and Munnik. On Joubertsdal the asbestos line has been more or less continuously proved over some 800 yards along the east and west strike and, in conformity with the synclinal fold, a further development has been located and opened up at the northern end of the sheet of green serpentine.

A Working face at a Northern Transvaal Asbestos Mine.

Geological Features.

According to Mr. Hall, of the Government Geological Survey, the seams are nearly always restricted to the plane of contact and extend through a variable width up to 15 feet from that contact downwards into the sheet of green serpentine. No fibre has so far been met with in the overlying blue serpentine. On Joubertsdal the horizon for the most part coincides with the lower contact between the two basic rocks, and this distribution is so marked and persistent, that it strongly indicates some genetic condition depending upon the constant association of two varieties of basic rocks.

Development.

On Joubertsdal the chrysotile line has been opened up by a large number of prospecting pits, irregular small quarries, and other open-cast workings, but including two major adits. These are aligned true north and south, each about 120 feet long. At a point from 40 to 50 feet vertically below the surface, each adit leads into drives along the fibre line, which has been folowed for a combined distance of 360 feet. At the development point known as the New Strike several adits have been put into the hill at the base of the fibre horizon and some 90 feet long, whence the latter has been followed along the strike by means of a drive about 100 feet long, and also further opened up by a series of irregular workings, more or less in the direction of dip, so that the chrysotile horizon is exposed over several hundred feet. The various workings are along a nearly east and west strike but in conformity with the anticlinal structure, the strike is tending south-westwards the further one goes west towards the extreme westerly or "Bush Gully" workings. Those developments which follow the southern edge of the syncline may be grouped as the "Southern Workings," whilst those situated at the northern edge constitute the "Northern Workings." The more important group and the principal sources of present supply is the southern one.

On the eastern extension of the asbestos line, on Lot No. 65, Messrs. Myburgh and Munnik's principal developments consist of a shallow straight open-cast workings several hundred feet in length following the upper contact between the green and blue serpentine.

Mode of Occurrence.

The asbestos is all of the chrysotile kind and in the form of cross-fibre seams made up of very delicate white silky fibre of superior quality without foreign admixture. The most striking feature about these seams is their remarkably regular distribution and great number. They are in practically all outcrops almost strictly parallel to one another and to the plane of contact between the green and blue serpentine, in marked contrast to the occurrence of chrysotile in serpentine described from many localities in other parts of the world, where the seams form an irregular network. The dip varies from about 10° to 25°, and, in conformity with the structure, is directed towards the north in the southern and to the south in the northern workings. Through a vertical thickness of seven feet the serpentine is densely packed with a very large number of parallel seams—amounting to 15 seams per linear foot over the uppermost part of the face and increasing to 30 seams per linear foot a little lower down, individual seams ranging from half an inch in width downwards. So regular is their distribution that the resulting alternation may be compared to the appearance of the "calico" or "bacon" rock familiar in certain varieties of banded ironstone.

An Optimistic View.

Although asbestos—in common with nearly every product under the sun—experienced a severe slump a few months ago, the price is now recovering, and there can be but little doubt that the industry, both in the Union of South Africa and in Rhodesia, is going to witness very considerable expansion. The market for asbestos is immense. New usages are being found for this mineral every year, and factories are springing up at the coast and elsewhere for the employment of asbestos in various articles of manufacture. The progress made in connection with the development of this branch of Rhodesian and South African mineral industries during the last few years has indeed been remarkable, but there is every reason for thinking that still greater progress will be attained in the future. And development is likely to be substantially hastened and output substantially enlarged if the new entrants into the field secure the large share of the business which they are understood to be seeking.

STANDARD BANK
OF SOUTH AFRICA,
LIMITED.
(With which is incorporated the African Banking Corporation, Ltd.)
Established 1862.

Authorised Capital - - -	£10,000,000
Subscribed Capital - - - -	£8,916,660
Paid-up Capital - - - - -	£2,229,165
Reserve Fund - - - - -	£2,893,335

GENERAL BANKING BUSINESS transacted at all Branches and Agencies; DEPOSIT and CURRENT ACCOUNTS opened; PURCHASE and SALE of INVESTMENT SECURITIES effected, etc.

SAVINGS BANK ACCOUNTS opened on terms, particulars of which may be obtained on application.

The BANK is in close touch with TRADE and INDUSTRIAL CONDITIONS, both local and overseas, and special attention is given to COMMERCIAL ENQUIRIES from customers.

EXECUTOR and TRUSTEE business undertaken.

Over 380 Branches and Agencies in Africa.

Agents and Correspondents throughout the World.

ASBESTOS
HOBDELL WAY & CO., LTD.
MINORIES, LONDON.
Cables: "HOBNAILS."

RHODESIAN TEAK & MAHOGANY
FOR MINING & BUILDING PURPOSES,
ANT, ROT AND DAMP RESISTING.
Sleepers, Guide Blocks, Deals, Scantlings, Flooring (Machined for Secret Nailing) and all kinds of Purpose-Made Joinery, Fencing Posts, Etc.
PRICES MODERATE.
RHODESIA NATIVE TIMBER CONCESSIONS,
35, PERMANENT BUILDINGS, HARRISON STREET,
JOHANNESBURG.
Box 5530—Phone 3568—Yard: Eloff St. Extension

The Year with the Barnato Mines.

POINTS FROM ANNUAL REPORTS OF THE CONSOLIDATED LANGLAAGTE, "KNIGHTS," LANGLAAGTE ESTATE, NEW UNIFIED AND NEW PRIMROSE.

[illegible] State Areas [illegible] Van Ryn Deep [illegible] The New State Areas [illegible] of Mining Leases, printed elsewhere in this issue. From the reports of the consulting engineer, Professor J. G. Lawn, we take the following [illegible]

Consolidated Langlaagte.

[illegible] lower than the previous year. There were decreases in the cost of stores and white wages, but the savings under these heads were largely counter-balanced by the increase in the cost per ton of native labour. This increase is accounted for by the fact that during the strike of miners in February the natives were paid, and notwithstanding the increase in the number of natives employed during the year yet, owing to the strike, the quantity of ore crushed, viz., 484,600 tons, was [illegible] tons less than during the previous year. The working profit for the year amounted to £172,608, as compared with £185,109 for the previous year; the price obtained for the gold won being £5 5s. 11d., as compared with £5 11s. [illegible] per fine ounce for 1920. The value of the stores on hand and in transit amounted to £27,709 at December 31, 1921, as compared with £58,234 at the end of the previous year. The East Shaft was sunk to the 16th level during the year and there stopped. Development is being pushed at this level, but the results so far are not very encouraging. The West Shaft was sunk continuously throughout the year, and although the results on the South Reef were not good, the Main Reef Leader is proving more hopeful. The returns show a decrease in the machine drills in use and an increase in hammer boys. This is due to the narrowing of the stopes in depth, which makes them less suitable for machine work. Although the development footage accomplished during the year was somewhat less than during the previous year, the values were better than had been anticipated, with the result that the ore reserves, which have been recalculated, show a slight increase and are estimated to stand at [illegible] tons, of an average value of 6·5 dwts. over a stoping width of 51 inches. They [illegible] of a value of 5 dwts. and over.

"Knights."

The quantity of ore crushed during the year amounted to 448,300 tons, being an increase of 32,100 tons over the previous year. The larger tonnage crushed is due to the increase in the native complement and to the opening up of the Knights Deep ground, from which a certain amount of ore was obtained. While the ore from this area helped to increase the tonnage, it tended to lower the average grade of the mine. The working costs at 23s. 9d. per ton crushed were 1s. 1d. per ton lower than for the previous year. The working profit for the year amounted to £91,054, as compared with £133,757 for 1920—a decrease of £42,703, due to the lower grade of the ore crushed, and to the lower price obtained for the gold won, which works out at £5 5s. 10d. per fine ounce, as compared with £5 11s. 6d. for 1920. The value of the stores, which at the end of 1920 stood at £47,469, was reduced to £34,283 at the end of the year. The ore reserves have been recalculated, and are estimated at 547,300 tons of an average value of 5·8 dwts. over 63 inches; they [illegible] and over. The ore reserves show a [illegible] little payable ore was developed during the year. Not only is the average value of the ore reserves low, but there are no rich patches to which we can turn to increase the grade in times of emergency. With the low value of the ore reserves the prospect of continuing to work at a profit largely depends on our being able to reduce working costs.

Langlaagte Estate.

The tonnage milled during the year amounted to 179,300 tons, being an increase of 14,000 tons over the previous year. The working costs at 26s. 3d. were 5d. per ton lower than for 1920, but notwithtanding the increased tonnage and lower working costs, the working profit, which amounted to £149,756, was £3,597 less than for the preceding year, due to the fact that the price obtained for the gold was £5 5s. 10d. per fine ounce, as compared with £5 11s. 7d. for the year ended December 31, 1920. The value of the stores on hand and in transit, which at December 31, 1920, stood at £51,459, was reduced to £40,610 at the end of the year. The [illegible] or Eastern Shaft was sunk 386 feet, and the development at this shaft was of a satisfactory grade. The [illegible] Shaft has still to be sunk 1,300 feet to reach the southern boundary of the property. The Main or Western Shaft was sunk 184 feet, and sinking was stopped in April last. The ore reserves have been recalculated, and are estimated at 950,000 tons, of an average value of 6·4 dwts. over a stoping width of 51 inches, and include ore of a value of 5 dwts. and over . The fall in the ore reserves is due to the fact that the ground near the Main Shaft was very much disturbed by dykes and the ore developed there was of low grade.

New Unified Main Reef.

The quantity of ore crushed during the year amounted to 133,700 tons, being an increase of 5,200 tons over the quantity crushed in the previous year. The ore mined shows a decrease of 1,300 tons, but there was an increase of 6,500 tons in the quantity taken from the surface dumps and mill bins. The working costs for the year were 20s. 2d. per ton milled, as compared with 22s. 1d. per ton in 1920, and the working profit for the year totalled £24,207, as compared with £41,037 for the previous year. The decrease in the working profit is due to the lower grade of the ore crushed, and to the lower price obtained for the gold won, which works out at £5 5s. 8d. per fine ounce, as compared with £5 11s. 10d. for the previous year. The value of the stores on hand and in transit at the end of the year stood at £3,889, as compared with £9,665 at the end of 1920. The ore reserves, which have been recalculated, are estimated at 38,900 tons, of an average value of 6·2 dwts. over a stoping width of 44 inches. This tonnage includes developed ore of a value of 4·25 dwts. and over. Very little straightforward stoping ground remains, but there is some low-grade Main Reef and reclamation to be milled, as well as a certain quantity of rock from the surface dumps. The period for which the mine will run depends upon the premium on gold and what reduction can be obtained in the working costs.

New Primrose.

The quantity of ore crushed during the year was 256,700 tons, being an increase of 24,600 tons over the quantity crushed for the previous year. The value of the gold recovered amounted to £293,803, which worked out at 22s. 11d. per ton crushed, and the working costs totalled £255,208 and equalled 19s. 11d. per ton. The average price obtained for gold for the year was £5 5s. 10d. per fine ounce, as compared with £5 12s. 11d. for 1920. The ore milled was of slightly higher grade, the working costs showed a decrease of 6d. per ton compared with 1921, and these factors, together with the increased tonnage crushed, notwithstanding the lower price obtained for gold, resulted in a working profit of £38,595—an increase of £6,880 over the previous year. The value of the stores on hand and in transit at December 31, 1921, amounted to £11,648, as compared with £24,559 at the end of 1920. Ore came from the various sections of the mine in fairly equal proportions. The mine is dependent on reclamation over a wide range of workings, and provided that either the gold premium is favourable or working costs can be sufficiently reduced, it may be that the mine can run on for another year or two, but, on the other hand, if conditions were against the mine it might have to close down as there is practically no reserve to fall back upon. The ore reserves have been recalculated and are now estimated at 25,100 tons, of an average value of 8·3 dwts. over a stoping width of 53 inches.

New State Areas.

Sinking in both the North and South Shafts was completed early in the year, the North Shaft having been sunk to a vertical depth of 3,768 feet and the South to a vertical depth of 4,071 feet. With the exception of the lowering of the main air and pumping columns, these shafts are fully equipped for working. The main connecting drive between the shafts was advanced from each shaft, and 3,156 feet of driving was accomplished during the year, leaving 1,450 feet to be done to complete the connection between the shafts. Development was carried on throughout the year, and in the Southern Section of the mine values were good in all directions. The development to the north-west of the North Shaft was poor, but the results to the south-east were encouraging. The ground near both shafts proved to be somewhat faulted, which at first made the laying out of drives difficult. Although sufficient development has not yet been accomplished to define the exact values of the blocks, enough has been done to prove that there are large blocks of payable ground in sight and to justify the ordering of a reduction plant.

Van Ryn Deep Results.

YEAR'S WORKING PROFIT £922,918—WESTERN DEVELOPMENT SATISFACTORY.

The year with the Van Ryn Deep is thus summed up by Prof. Lawn, the consulting engineer, in his annual report:—The following table shows a comparison of the results of the past two years, the standard price of gold being taken for comparative purposes:

	1920	1921.
Tons milled	583,550	611,400
Revenue from gold	£1,299,060	£1,381,294
Working costs	£747,931	£810,777
Working profit	£551,129	£570,517
Revenue per ton milled ...	44/6·3	45/2·2
Working costs per ton milled	25/7·6	26/6·3
Working profit per ton milled	18/10·7	18/7·9
Development footage	15,182	16,960

In addition to the working profit of £570,517, the premium on gold resulted in a credit of £352,401, making the total working profit for the year £922,918, as compared with £964,883 for 1920. The increase of 27,850 tons over the previous year's tonnage milled was due partly to a better supply of natives and partly to improved facilities for handling the ore in the mine. The working costs show an increase of 11d. per ton milled, due chiefly to the fact that the mine had been at work for eight years, and consequently a good many items required replacement or repair, and this added substantially to the cost of production during the year. It is hoped to effect a reduction this year, but it must be remembered that there is a large percentage of waste rock sorted out at this mine, and while this increases the grade of the ore milled, it adds considerably to the working costs per ton milled. The quantity of waste sorted out during the year amounted to 204,183 tons, or 25·036 per cent. of the ore mined, and if there had not been any sorting during the year and all the ore hoisted had been put through the mill the working cost per ton milled would have averaged about 20s. 6d. instead of 26s. 6·3d. per ton. The average price obtained for gold for the year was £5 6s. per fine oz., as compared with £5 12s. for 1920. The value of stores on hand, which at 31st December, 1920, stood at £47,081, was reduced to £29,162 at the end of the year. Development in the western section of the mine was satisfactory, but owing to preparations for stoping it was not possible to carry on the development as rapidly as during the previous year. Arrangements for handling a considerable tonnage from this area are now complete, and a certain amount of stoping is in progress. During the year the 10th level tunnel eastward was advanced vigorously to expedite the development of the south-east corner of the mine. The strip of ground on the eastern boundary was explored during the year, and ore of a high grade was exposed. The scheme for the improved ventilation of the mine, which was mentioned by the chairman in May last, has now been completed with very satisfactory results. In the past your mine obtained its supply of water for industrial purposes from the dams belonging to the Kleinfontein Estates Company, but as this supply did not provide sufficient insurance against shortage of water in the dry season, it was important that additional supplies should be secured, and the company contributed to the cost of a pipe line connecting certain of the Far East Rand mines with the Rand Mines Company's water system. The company has already benefited very materially from this scheme. The development footage accomplished during the year was substantially greater than the previous year, as will be seen from the table given above. Last year the minimum value of ore included in the ore reserves was 4 dwt.; this year it has been raised to 4·25 dwt., and on this basis a recalculation at the end of the year showed there were 3,317,000 tons of ore developed—a slight increase on the ore reserves at the end of last year. The average value worked out at 9·2 dwt. over a stoping width of 73 inches, as compared with 9·7 dwt. over 72 inches for the previous year. The reduction in average value was due to the inclusion of ore developed in the western section of the mine and to a slightly increased stoping width.

Mining Men and Matters.

Mr. J. Andrew Cohen leaves this week on a visit to England.

* * *

Professor J. G. Lawn, Joint Managing Director of the "J.C.I.," leaves this week on a six months' visit to England.

* * *

Mr. N. O. Curry, the popular member of the firm of Messrs. S. Sykes and Co., Ltd., leaves this week on a six months' trip to England.

* * *

Mr. G. M. Clark, the well-known consulting engineer, leaves for England by the "Walmer Castle" on a six months' trip. During his absence Mr. Moore, his partner, will be in charge of the firm's interests.

* * *

We much regret to state that the death occurred on Wednesday at the Lady Dudley Nursing Home, Johannesburg, of Mr. H. W. Pridgeon, manager of the West Springs, Ltd. Mr. Pridgeon was for many years underground manager of the Brakpan Mines, and in 1916 came to the Springs district as manager of the Daggafontein Mines when that company came under the control of the Consolidated Mines Selection group. In 1919 he was transferred to West Springs as manager, and was about to depart for a six months' holiday in New Zealand at the beginning of the year when the recurrence of an old trouble in his leg, caused through a fall, necessitated his removal to a nursing home. His heart became affected, and after much pain and suffering he passed away at the age of 54

Chromite for the Manufacture of Ferro-Chrome.

RHODESIAN AND NEW CALEDONIAN ORES CONTRASTED—VARIETIES SUITABLE FOR ELECTRO-METALLURGICAL SMELTING.

(Specially written for the "S.A.M. & E.J.," by J. A. Holden.)

The production of chrome iron ore in Southern Rhodesia has become one of the principal branches of the mineral industry in that country. Last year's output had a value of £195,360. The chromite deposits of Charterland were very fully described in our last Rhodesian number, and will be further dealt with in the big Southern African Annual to be produced towards the end of this year. Extensive chrome iron ore deposits also occur in the Transvaal, and the accompanying article by a metallurgist on the technique of ferro-chrome manufacture therefore possesses a great deal of local interest.

With the exception of a small quantity produced by the Thermit process, ferro-chrome is made by smelting chromite with reducing and fluxing agents in electric-arc furnaces. The oxides of iron and chromium are simultaneously acted upon with the result that an alloy is formed by direct reduction.

Chrome Iron Ore stacked at Selukwe Station awaiting transport.

The demand for ferro-chrome comes entirely from the steel-works, for chromium (either alone or in conjunction with other special elements) is an important constituent of a large variety of alloy steels. In order to produce these various kinds of alloy steels many grades of ferro-chrome are required. In reality this grading is simply a question of carbon content, and Table 1 gives the full series.

Table 1.

High Carbon Series

8 to 10% Carbon with 60% minimum Chromium.
6 to 8% .. ..
4 to 6 .. ..

Low Carbon Series

2 to 4%, Carbon with 60% minimum Chromium.
2% Carbon maximum with 60% minimum Chromium
1% .. ..
·75 . .. .
·65% .. ..
(Carbon free made by the Thermit process)

Chromite mined in different parts of the world not only varies considerably in chemical composition, but it also exhibits strikingly different physical properties; Rhodesian ore, for example, is more refractory than New Caledonian. As the consumption of electrical energy is the most important item in the cost of production, the refractory nature of certain ores, unless offset by some other considerations, may render their economic working an impossibility. It may be added that the current used in making 4 to 6 per cent. carbon ferro-chrome may vary between 6,000 and 10,000 K.W. hrs. per British ton.

Whereas the high carbon series of ferro-chrome alloys are usually smelted in one operation, the lower carbon series require a duplex process. The first step in the manufacture is to make a high carbon alloy extracting as much chromium from the ore as possible; needless to add the maximum reduction is obtained when manufacturing the 8 to 10 per cent. carbon alloy. To make an alloy of the low carbon series a high carbon ferro-chrome is smelted with a quantity of chromite; for this purpose the primary alloy must be very rich in chromium because in the second smelting the alloy loses chromium as well as carbon, and as shown in Table 1, 60 per cent. is the minimum allowable chromium content for any grade.

From the foregoing it follows that many types of chromite may be used in the ferro-chrome industry; thus an ore unsuitable for refining purposes may be quite satisfactory for the production of a high carbon alloy. Dealing firstly with the manufacture of the high carbon series which are not intended for refining, the requirements are not very exacting, and many varieties of ore can be successfully smelted. Rhodesian ores are used in considerable quantities in this branch of the industry; although they are rather more refractory than chromite mined on the island of New Caledonia, the high freightage on the latter renders them too costly for general use. Table 2 gives the limits in composition of Rhodesian chromite; these figures are taken from twenty analyses representing thousands of tons of the ore.

Table 2.

Chromic Oxide (Cr_2O_3)	46.0 to 54%
Ferrous Oxide (FeO)	10.0 to 14%
Silica (SiO_2)	4.0 to 9%
Alumina (Al_2O_3)	12 to 20%
Magnesia (MgO)	9 to 14%

Indian chromite as a rule is not rich enough to smelt by itself, but it is sometimes used mixed with a richer ore, such as Rhodesian. A typical analysis of Indian chrome-iron ore is as follows:—Chromic Oxide, 47.02 per cent.; Ferrous Oxide, 20.75 per cent.; Silica, 3.95 per cent.; Alumina, 22.13 per cent.; Magnesia, 3.83 per cent.

It has already been stated that rich chromite is necessary to produce high carbon ferro-chrome suitable for conversion into a low carbon alloy. Richness of ore implies a high content of chromic oxide (Cr_2O_3), but this alone is not sufficient, for in smelting practically all the iron oxide is reduced, and with an ore containing a high content of this oxide the resulting alloy will be low in chromium; this will occur even with a high chromic oxide content, because of the dilution caused by the iron formed from the reduced ferrous oxide. Thus it will be inferred that the iron content of a chromite ore is a matter of importance, and it explains why some ores comparatively rich in chromic oxide are of very little value to the ferro-chrome maker. Take for example the typical analysis of the Indian ore cited previously; although the chromic oxide is fairly high (equivalent to 32.17 per cent. of chromium), the ferrous oxide is so great (equivalent to 15.97 per cent. of iron) that only a low grade ferro-chrome could be made; in fact under the most successful conditions the alloy would not contain more than 60 per cent. of chromium, and in practice it would often fail to reach this amount.

To value chromite the iron must be considered in conjunction with the chromium content, and the higher the ratio of the latter to the former the better. If the chromium present is three times that of the iron, the ore may be considered a valuable one, particularly if the chromic oxide is not less than 50 per cent. (equivalent to 34 per cent. of chromium). A parcel of high grade Rhodesian chromite which gave a rich ferro-chrome analysed as follows:—

Chromic oxide	54.11% (equivalent to 37% chromium).
Ferrous oxide	13.8% (equivalent to 10.6% iron).
Silica	4%.

Here it may be added that the iron content of the analyses given is expressed entirely as ferrous oxide; as a matter of fact there is often some ferric oxide present, but the ferro-chrome maker is not usually concerned about the state of oxidation; he is, however, particularly keen to know exactly the amount of iron present.

To convert the rich high carbon ferro-chrome into low carbon ferro-chrome a high grade easily smelted chromite is necessary, and the New Caledonian ore is particularly suitable for this operation. No doubt suitable ores for this purpose exist in the Rhodesian deposits, probably in the valleys of the chromite hills. The usual Rhodesian ore imported into Great Britain consists of hard flinty lumps (but the writer has come across occasional parcels of soft material) whereas the New Caledonian ore is friable and contains large quantities of fines. It can be reasonably assumed that New Caledonian chromite has been decomposed by weathering agencies which have not only affected the ore physically, but have also caused a natural concentration. On comparing numerous analyses of the two ores in question, it is seen that the silica content of the Rhodesian is considerably higher than the New Caledonian, for whilst the former contains from 5 to 10 per cent., the latter rarely contains more than 2 per cent. A typical analysis of New Caledonian chromite is as follows:—Chromic Oxide, 53.9 per cent.; Ferrous Oxide, 16.0 per cent.; Silica, 1.4 per cent.; Alumina, 14.71 per cent.; Magnesia, 11.33 per cent.

The development of the stainless steel industry means an increased demand for rich chrome ores. Stainless steel contains from 12 to 14 per cent. of chromium and about .35 per cent. of carbon, hence it contains approximately 20 per cent. of low carbon ferro-chrome. As it requires roughly three tons of chromite to produce one ton of low carbon ferro-chrome, it will be readily appreciated what the stainless steel industry means to chromite producers.

Lonely Reef Progress.

The report for the quarter ended 31st December has the following, *inter alia*:—Ore reserves at 31st December, 1921, 204,249 tons; increase on schedule (including 1,589 tons ore broken in stopes), 7,703 tons. The average grade is 18·10 dwts. per ton, being a decrease of 0·69 dwt. The work on the hoist chamber, bins and station for the No. 2 interior incline shaft was carried far enough to allow a start to be made in sinking from the 24th level to the 25th level, and the shaft was sunk 25 ft. below the 24th level. The south drives at the 23rd and 24th levels were advanced in the footwall of the reef for the reasons explained in earlier reports. The reef was opened by No. 1 boxhole in the south drive at the 23rd level south, and after the water had drained off stope drives were started. The stope drive north was advanced 60 ft., the reef averaging 20·7 dwt. over 62 in. The stope drive south was advanced 75 ft., the reef averaging 26·0 dwt. over 51·4 in. The drive north at the 23rd level was advanced in the reef 174 ft. to a distance of 537 ft. from the shaft crosscut. The reef averaged 22·3 dwt. over 31·8 in. for the distance driven. The pay shoot has been found to extend further in this direction than was expected. The drive north at the 24th level was advanced 121 ft., the average of the reef being 12·5 dwt. over 32·8 in. After passing through the very rich ore described in the report for the last quarter the ore fell off in grade, and a gap in the pay shoot is now being passed through. There are still 200 ft. to drive to the point reached by the 23rd level north, and it is expected that more good ore will be found here. The fourth and last of the gas engines was delivered on the mine on 22nd November, and was erected and started on 1st December, since which date the gas plant has provided all the power used on the mine. The total cost of power in December was £1,645, as compared with the average cost of £4,557 for the last three months when the steam plant was in use. The saving effected by the gas plant is considerably in excess of the estimated saving, and is equivalent to a reduction in working costs of over 10s per ton milled. Profit for the quarter, £54,145, less capital expenditure £37,903.

Coronation Syndicate: A Correction.

In the detailed report in our last issue of the speech made by Mr. G. Sonn at the special meeting of the Coronation Syndicate, the Chairman, by a printer's error, was made to say that the Coronation Company had £9,188 cash in hand. This statement, in point of fact, referred to the Afrikander Proprietary, in which the Coronation Syndicate is interested. The parent company has, of course, now been successful in raising £100,000 fresh capital.

J. RAMSAY-ANDERSON, B.Sc., Agriculture, 16 years' practical experience of farming and planting in Africa. 8 years as Advisor and Director of Agriculture, Colonial Governments. Is open to report, advise and value properties; personal supervision; advice given to intending settlers, fees moderate.

14, Palace Buildings, Pritchard Street,
JOHANNESBURG.

Metals and their Names.

DERIVATIONS AND ORIGINS—SOME LITTLE KNOWN FACTS.

The following article, which has been written by a well-known mining man engaged in prospecting operations in one of the outside districts, has been forwarded to us, and although the subject dealt with is somewhat outside the scope of this Journal, we deem it to be of sufficient interest to publish in our columns. Our correspondent handles his subject well, and the article contains numerous interesting statements which will probably be news to many readers.

From very ancient historical times six metals have been in use—gold, silver, iron, copper, tin and lead; these names are all practically the same in English, Dutch, German, and other Teutonic languages. Thus in German we have geld, silber, eisen, kupfer, zinn and loth, though the latter is now used rather for pewter or solder than for pure lead. It does not follow, however, that these names were originally Teutonic; in one instance, that of copper, we know that the name was introduced by the Romans, who in turn borrowed it from the Greeks. Copper was originally "Aes Cyprium," that is metal (brass literally) from Cyprus, in which island were the most ancient copper mines in the world. So the other names above mentioned probably had a chequered history also if it were now possible to trace it.

The Greeks became acquainted with quicksilver, which they called "hydrargrum," *i.e.*, liquid or water silver, very similar in meaning to its present name. It was the alchemists of a later date, whose science was so largely permeated with astrology and mysticism, who named the metal "mercury" after the nimble-footed messenger of the gods. Some of the alchemists believed that quicksilver was an ingredient of all metals, doubtless because so many melted metals resemble it, and to the alchemist, as to many superficial observers even to-day, outward resemblance was a sign of real affinity.

The Part of the Alchemists.

To the alchemists we owe the discovery of the metals, arsenic and antimony. The oxides and sulphides of these elements were in use long before as cosmetics, drugs or poisons. The name arsenic signifies "male" or "powerful"; the etymology of antimony is obscure, though one far-fetched derivation makes it "anti-monachus," the enemy of the monks, because some German monks are said to have died from using it, probably as medicine.

In the middle ages the Germans, especially around the Hartz Mountains, were the great metallurgists, and to them we owe the discovery and naming (sometimes by accident as it were) of several metals. Tungsten is a Bohemian word signifying "heavy stone"; bismuth or wissmuth is a miner's term, though its exact meaning is unknown; zinc is apparently the same word as tin (zinn), so named because no doubt at first it was confused with tin, which it somewhat resembles. Nickel and cobalt have an interesting history; their chief ores, kupfer-nickel and speiss-cobalt, occur commonly with copper and other metallic ores, and are not unlike them in appearance. When smelted by the primitive methods in use in early days, they gave nothing, however, but oxides (ashes). The orthodox explanation of such an unexpected phenomenon in those days was witchcraft, so the minerals were named kupfernickel (literally Old Nick's copper) and speiss-cobalt—"goblin's looking-glass"—cobold being the Germanic equivalent for the English "goblin," and the brilliant appearance of the mineral accounting for the other part of the name. In the 18th century when the metals themselves were obtained and found to be distinct from all others, the names nickel and cobalt were still retained. Another metal discovered before the days of exact science was platinum, found by the Spaniards in South America and at first mistaken for silver. When the mistake was discovered they named it "platina," that is "little silver" ("plata" being the Spanish for silver, compare English "plate").

Several alloys of metals were known from quite early days. Bronze, whose name signifies "brown," just as English slang terms a penny a "brown," was perfected by the early metallurgists to a degree now unapproached. The name "brass" is connected with words meaning fire—the cook "braizes" meat still—doubtless because brass had to be made in a furnace from zinc ore and copper; whereas other alloys were made by mixing two melted metals in a pot. Solder was named from the Latin "solidus," since it was used to make metal joints solid. Pewter, an alloy of tin and lead, almost took the place of glass and earthenware in household use a century or two ago; it is the same word as "spelter," though the latter is now used exclusively for zinc itself in English commerce; another instance no doubt of two things being confused through similar appearance.

"Chemical Curiosities."

A good many metallic oxides (hydrates or carbonates) were in use from early times, though the metals themselves were not known, or even suspected. Thus there was lime (kalk), soda (this name is said to be derived also from Latin "solidus," though the connection is not very clear), potash (ashes made in a pot from wood), magnesia alba, and magnesia nigra. Of the last two, magnesia alba, "white magnesia," is still known under that name, but the other, "nigra" (black magnesia), was consciously or unconsciously changed into "manganese." The name magnesia is certainly derived from a town or district in northern Greece called magnesia. The name magnet also comes from the same source.

From 1800 onwards the discovery and isolation of new metals proceeded apace, and a rule sprang up of giving all of them Latin sounding names ending in -ium. There are about 50 of them in all up to the present time, the majority still being chemical curiosities, though each year sees a new one added to the list of useful and commercial materials. The first was sodium, from soda, and the hybrid name, potassium (made up from English "potash" with Latin -ium), then came calcium, magnesium, aluminium, from their respective "earths" or oxides. The gem beryl furnished beryllium, while the zircon, whose name in Cingalese means "worthless," because it is like a diamond but very inferior, produced zirconium. For others names had to be invented: gallium was discovered by a Frenchman, germanium by a German, polonium by Madame Curie, a Pole; ruthenium and columbium, though named after Russia and America, only received this honour because the minerals containing them originated in those countries. Indium (blue), thallium (green), iridium (rainbow tinted), rhodium (rose), were named from the colours of their salts, spectrum lines or solutions, while osmium got its name from the powerful smell (Greek "osme") of its acid oxide. Molybdenum is merely the Greek name for lead, which it much resembles, and radium was of course so designated from the rays it emits.

Ytterby, a district in Sweden from which many rare minerals are obtained, gave its name, after the style of the "beheaded word" puzzle, to ytterbium, yttrium, terbium and ertium, while the old Norse gods and goddesses are responsible for thorium and vanadium (Thor and Vanadis). Classical mythology was not forgotten either, and we have palladium (Pallas), cerium (Ceres), tantalum (Tantalus), niobium (Niobe) and uranium (Uranos). Tantalus, according to the ancient tale, was punished by having a cup of wine held just beyond reach of his lips, and Ekeberg, who discovered the metal tantalum, so named it because "even when in the midst of acid it was unable to take the liquid to itself." Niobium was at first supposed to be the same as tantalum, but when proved to be distinct by Rose in 1844, he named it niobium, because Niobe was the daughter of Tantalus. Didymium (didymus, a twin) was so-called because it was so like another rarity, lanthanum. The name was, however, prophetic, for about 40 years after its discovery Welsbach, who invented the new universal gas mantle, actually split didymium itself into two distinct constituents, now named neodymium and praseodymium. The older chemists were not only poetical and imaginative in naming their discoveries; in one instance at least they were not above practical jokes about them. In 1803 Wollaston, who did so much work on platinum, discovered the metal palladium, but instead of announcing his discovery in the usual way, he put the metal on sale at a London silversmith's as a new kind of silver, and for two years allowed his associates to puzzle their heads as to what it was, and where it came from. Since 1914 palladium has again come to the front to take the place of the more costly platinum for certain purposes. Tellurium, an element often found in gold ores, and named after "tellus" (the earth, with silenium (selene, the moon) were at first supposed to be metals, and retained their metallic names even after their claims to the honour had been proved groundless.

Trade and the S.A.R.

The latest bulletin of the General Manager of the S.A.R. naturally contains extended reference to the splendid part paid by the railway staff in the recent trouble. Dealing with trade generally, Sir William Hoy writes: In the last issue of the bulletin, reference was made to the influence of the industrial disturbances on the Witwatersrand upon railway earnings, but the decline in revenue then recorded, serious as it was, was negligible compared with the falling that has since taken place. For example, earnings for the week ended 18th March dropped to £280,148, no less than £155,054 below the estimate. Weekly earnings have not been so low since November, 1918. The calamitous effect of the strike and disturbances on railway earnings may be gauged from the fact that during the period of the strike up to the 18th March earnings were £828,423 less than the estimate and £1,138.039 less than the earnings for the corresponding period of the last year. Notwithstanding the coal strike in the Transvaal and Orange Free State, the output maintained was more than sufficient for the restricted requirements. The output declined from 556,017 tons during the first four weeks of December to 396,066 tons for the corresponding period in January and 290,937 tons during the same period in February. But local requirements were light, and the demand for bunker and export coal at the ports was much below normal. There are, however, indications of a revival in the bunker and export trade. The resumption of work on the gold mines will increase local orders. The position in regard to coal supplies and requirements at the principal ports, on 4th March, was as follows: 55,214 tons were on hand at, and in transit to, Durban and ships were in port requiring 27,000 tons. At Capetown 25,090 tons were on hand, the estimated requirements being 7,050 tons. 12,669 tons were on hand at, and in transit to, Delagoa Bay.

SWAZILAND TIN.

The following are the results of the operations of this company for the month of March:—Concentrate recovered, 22·2 tons; estimated net profit for the month (including credit adjustments on previous shipments), (taking tin at £145 per ton), nil.

Riet River Diamond Syndicate.

We have received a prospectus of the Riet River Diamond Syndicate, Limited. The capital is £1,250 in 125 shares of £10 each, which are offered for subscription, and are payable as follows: £5 per share on application, and the balance of £5 within one month after allotment. Out of the above capital the sum of £250 is to be paid to the vendor for expenses already incurred. The directors are: H. Hargreaves, 85 Cullinan Buildings, Johannesburg; E. Lazarus, 49 Leijds Street, Joubert Park, Johannesburg, and three others to be elected by the syndicate. The objects of the syndicate are to prospect the farm "Koppics Kraal" No. 17, situated in the division of Kimberley and 26 miles from that town, in extent 4.070 morgen, and thereafter to purchase the mineral rights of the farm, from which latter diamonds have been recovered and duly registered. In the event of these operations being successful, to promote a company, having a capital of not less than £53,000, out of which every shareholder in this syndicate shall receive free 150 fully paid shares for every share held in this syndicate. The farm has a frontage of some three miles on the Riet River, the south-west boundary being formed by that stream. In addition to the river, which is said to rarely cease flowing, and consequently offers a considerable water supply, there is a well and mill on the farm with ample water, and there is little doubt that other sources could be developed to give water to all parts of the farm. It is stated that as recently as October last, four diamonds of excellent quality were found, which have been registered. The title of the farm is what is commonly known as "Free State Title," being similar to that which the farms of the New Vaal River Estates are held. All moneys subscribed shall be deposited in the bank in a trust account until such time as the Board of Directors shall have been elected. The syndicate is to pay the costs of registration, etc.

OSBORN'S
STEEL PRODUCTS.
THE VERY NAME
OSBORN
GIVES THE
IMPRESSION OF
HIGH GRADE
MATERIAL.
A PRODUCT
OF QUALITY.

We Solicit Your Enquiries.

SAMUEL OSBORN
(S.A.), LTD.
'Phone 4673 Box 3162
JOHANNESBURG.
WORKS: . . CLYDE STEEL WORKS, SHEFFIELD.

The State Mines Record Year.

GROSS PROFITS £1.760.490—IMPROVED ORE RESERVES—RAILWAY TAXATION—DEVELOPMENT SATISFACTORY.

The position of the State Mines is admirably reviewed by [illegible], the consulting engineer, in his annual report for last year. He writes:—The following table shows a comparison of the results of the past two years, the standard price of gold being taken for comparative purposes:

	1920.	1921.
Tons milled	1,515,000	1,625,500
Revenue from gold ...	£2,562,399	£2,828,220
Working costs	£1,680,361	£1,757,911
Working profit	£882,038	£1,070,309
Revenue per ton	33 9.9	34 9.6
Costs per ton	22 2.2	21 7.6
Working profit per ton	11 7.7	13 2
Development footage...	38,195	39,072

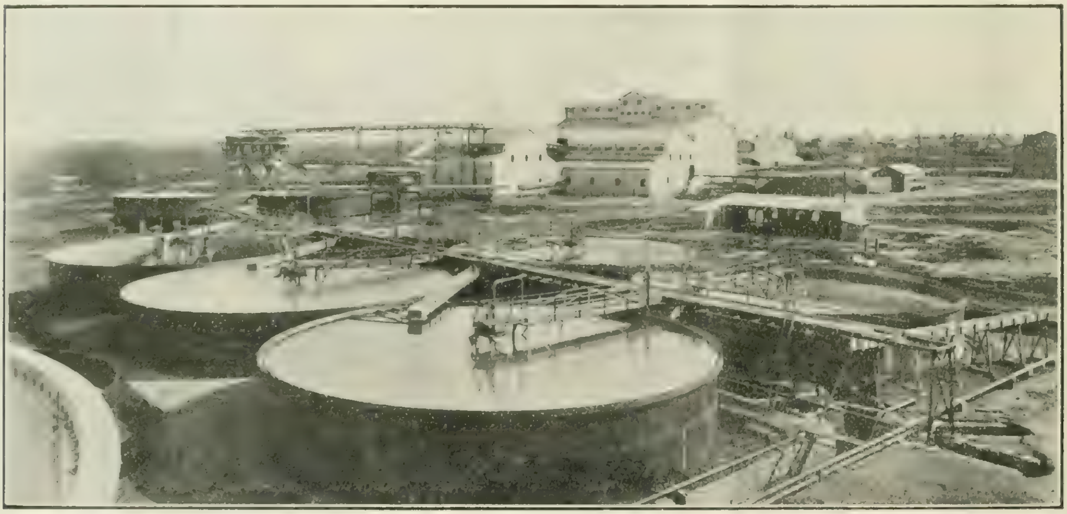
In addition to the working profits of £1,070,309, the premium on gold resulted in a credit of £692,181, making the total working profit for the year £1,762,490, as compared with £1,708,164 for 1920. During the year the mine had a plentiful supply of natives, and with the improved arrangements underground it was possible to keep the reduction works running at their full capacity throughout the year, with the result that 1,625,500 tons were crushed, an increase of 110,500 tons over the previous year.

Costs.

Working costs at 21s. 7d. per ton milled were 7d. per ton lower than the working costs for 1920, the decrease being due partly to the increased tonnage and partly to the reduction in white wages, which came into effect in August and October. The average price obtained for gold for the year was £5 5s. 9d. per fine oz., as compared with £5 12s. 4d. for 1920. It was hoped and expected that some reduction would be effected in the cost per ton of stores, but while prices have fallen in certain articles, yet in items such as coal, mining poles, and explosives, which are important stores used on the mine, the costs have increased. This is chiefly accounted for by the heavy railway rates which the mines have to bear.

Railway Rate Taxation.

So far there has been nothing but a steady increase in railway rates since the Great War began. These increases have affected the mines very severely, and it would appear that some relief in this direction is now overdue. For instance, take the item of coal—the mines pay a pit-head price for coal which is practically the same as that paid in 1914, but there has been considerable increase in railway rates. The amount paid for coal by the mines of the Witwatersrand in 1920 is given in the Government Mining Engineer's Report as £1,011,165, and it is estimated that the railage represented in this figure amounted to £603,000, whereas if the same rates had been prevailing as in 1914, the amount paid would have been £474,000. It cannot be said that the sum of £474,000 would not have been fair remuneration for the services performed by the railway, as it is well known that the railway line from Witbank to the Rand is a very profitable one so that the increase of £129,000 was an indirect tax imposed upon the mines. Seeing that the coal is purchased at the collieries at bedrock price, it is quite clear that in such an item as this the only hope of any reduction is in connection with railway rates. In addition, it cost the mines of the Witwatersrand approximately £50,000 more for power than it would have cost them in 1914 on account of the increased railage on coal. Another item which may be mentioned is mining poles; these are all grown in the country, and the railway gets more out of the price paid by the mines than the grower does. Taking the figures of 1920, the value of mining poles used on the Rand amounted to £526,052, and of this sum it is estimated that £300,000 represents the railage, which is an increase of £90,000 on the railage which would have been charged at the rates of 1914. In the case of explosives, it is estimated that the increase in 1920 railway rates over the rates ruling in 1914 meant £70,000 to the mines. So it will be seen that while we may look for some reduction in the price of stores, the Government ought also to meet the mines by giving some relief in railway rates. The value



Government Areas' Reduction Plant.

of the stores on hand, which at 31st December, 1920, stood at £151,886, was reduced to £85,156 at the end of the year. The average value of the gold recovered per ton is slightly higher than for the previous year, due to the increase in the percentage of waste sorted out and to the quantity of ore obtained from cleaning out, sweeping, and washing old and abandoned stopes and workings. This work is a regular and profitable operation, and the fines obtained from this source are of high value. The water question has always been a serious matter, as the mine yields only a limited supply of water and there are no dams or water-rights available. An arrangement was entered into with the Kleinfontein Estates Company some years ago which was satisfactory at the time, but with the increased tonnage year by year, this source of supply gave cause for anxiety in the dry season. It was, therefore, important that additional supplies should be secured, and the company contributed to the cost of a pipe line connecting certain of the Far East Rand mines with the Rand Mines Company's water system. This additional supply has already proved of great benefit to the company.

Ore Reserves.

The ore reserves, which have been recalculated, are estimated at 10,232,000 tons, of an average value of 8·5 dwt. over a stoping width of 77 inches; they include ore of a value of 4 dwt. and over. The ore reserves are practically the same as at the end of the previous year, though they show a slight increase in the average value. The aim during the year has been not so much to open up new areas as to block out and make readily available for stoping the large areas already exposed. The ground south of the southern dyke is being opened up, and so far the values have proved satisfactory. In the north-east section three drives are being advanced towards the Geduld boundary on the 10th, 12th, and 14th levels. The 14th level revealed satisfactory values, but the values on the other two levels have been irregular. All the development to the west of the mine has been good, and, on the whole, the development of the mine, during the year has been satisfactory.

New Circular Shaft.

Towards the end of the year a start was made with the circular shaft, to which the chairman referred at the last annual meeting of the company. This shaft is being sunk in the centre of the property for ventilating purposes. It will be a circular shaft with an internal diameter of 22 feet and will have a depth of approximately 3,500 feet. The cost of the shaft is estimated at £125,000, and whilst this is a heavy expenditure for the company to face, the ventilation of the mine without such a shaft would become more and more difficult as the area of the workings increased, whereas once it is sunk, the conditions underground will be materially improved during the remainder of the life of the mine.

City Deep Position.

The annual meeting of the City Deep will be held on May 26, and an advance copy of the annual report has reached us. This shows that the outstanding features of the year's operations may be described as the substantial profits earned, viz. £711,516 2s. 1d. and the large tonnage of ore milled, which constitute records since the company commenced crushing operations. In making a comparison of the results achieved with those of the previous year, it will be observed that the tonnage milled showed an increase of 132,600 tons due partly to the satisfactory supply of native labour being maintained throughout the year. There was an improvement in the yield of ·262 dwt. per ton, but this was more than off-set by the lower price obtained for gold produced, the recovery value showing a reduction of 1s. 1d. per ton milled. On the other hand, working costs were 3d. per ton lower, the net results for the year's operations being an increase in the working profit of £62,167 16s. 1d., despite a decrease of 10d. per ton milled as compared with the preceding year. The ore reserve was re-estimated and revalued at December 31, 1921, and shows a reduction of 670,900 tons with a slight falling off in value of ·2 dwt. per ton.

MOZAMBIQUE COMPANY.

During the year 1920, to the end of which the accounts have been made up and recently published, most of the principal items indicate increased prosperity, but on a very modest scale. The profit for the year—*vide* the report of the Fiscal Council—was £15,709, and, with the balance of £108,109 from 1919, made a total to credit of £123,819, reduced by certain deductions to £60,025. The available funds at the end of 1920—the working of 1920 having been closed with a credit balance of £23,656 — amounted to £429,065. The general report and accounts show receipts in Africa £308,761, and expenses £276,650, the balance being £32,110. In Europe the receipts were £27,784 and the expenses £36,238, the balance being £8,453. The total receipts were £336,546, leaving a credit balance of £23,656, as above. The principal source of revenue was customs, being £131,378, an increase of £30,229 as compared with the previous year. Another increase was on account of the hut tax —viz., £3,878. Concessions and rents show an increase of £10,182, and the total income was £276,893, being £66,195 in excess of that of the previous year.

The Mozambique Co. claims to be the only State administration that has not raised its duties and taxes during the Great War. There has, however, been instituted a new customs' tariff, which is expected to increase revenue. The commercial movement in Mozambique territory is always increasing, and in 1920 contributed to its prosperity. The report claims, for this reason, that the territory has been effectively developed. In 1920 some 396 ocean-going and large coasting ships (67 more than in 1910), with tonnages of 855,906, entered the port of Beira, discharging 92,718 tons of cargo and 6,252 passengers. There was an increase of 44,136 tons in respect of cargoes, but passengers were fewer by 2,840. Outgoing ships received at Beira contained 29,174 more tons of cargo, but 754 fewer passengers, than in the previous year. The agricultural products were on the down grade, and public works only received but a moderate amount of attention. The land employed in agricultural exploitation and cattle ranching was increased to 543,170 and 441,047 hectares respectively. Maize is the predominant cultivation, and the export last year was 655 tons, value £7,439; but sugar has always been Mozambique's richest export. The production last year reached 25,819 tons; but the export was slightly less than in 1919—viz., £461,066 value, as compared with £463,365. There has been an increase in the number of cattle by 11,958, and this branch of commerce is increasing rapidly.

The mining movement in the territory is described as having been far from brilliant in 1920, as may be judged from the fact that the value of the gold produced was only £40,031, and the output of tin and copper almost negligible. The population decreased in the same year by 2,909. The whites number 2,520, the blacks 250,180, with 708 Asiatics and 1,625 mulattos. A scarcity of native workers is complained of. Various subsidiary companies are at work, whose financial results are not disclosed.

Falling World's Gold Output.

The declining tendency of the world's gold production evident since 1915, when the peak was reached, still continues, the fall in 1921 being over 1,000,000 oz., to which the British Empire materially contributed. Still, its proportion of the world's output remained almost unchanged at approximately 70 per cent. The predominant position is, of course, due to the mines of the Transvaal, where the falling-off in 1921 amounted to only 29,733 oz. Rhodesia showed an increased output, but Nigeria declined slightly. The fall in the world's gold output is traceable, generally speaking, to increased cost of production unaccompanied by a corresponding rise in the value of the metal. The highest price in the London market, 127s. 4d. per fine oz., was reached in February, 1920, the average price for that year being 112s. 11½d. The quotation during 1921 fell considerably, the highest and lowest prices being 115s. 11d. and 97s. 7d. respectively, and the average price 107s. 0¾d. The fall has continued through the current year with the improvement in the New York exchange.

Randfontein Central.

PROFITS IMPROVED—VIGOROUS DEVELOPMENT POLICY—POSITION REVIEWED.

The position and prospects at Randfontein Central are thus described by Professor Lawn, the consulting engineer, in his annual report for 1921:—

The quantity of ore crushed during the year amounted to 1,461,000 tons, which was 99,000 tons less than the tonnage milled in 1920. The working costs at 27s. 9d. per ton show an increase of 3d. per ton over the working costs for the previous year. The cost of producing 427,893 fine ounces was 94s. 8d. per ounce, as compared with 410,814 ounces produced in 1920 at a cost of 104s. 4d. per ounce. The gold recovered was 5·857 dwts. per ton, while in the previous year the recovery was 5·267 dwts. per ton. The increase in grade was due to the closing down of Nos. 8 and 9 sections, where the grade was low. The price obtained for the gold won was £5 6s. 2d. per fine ounce, whereas in the previous year the average price was £5 12s. Although the results obtained during the early part of the year were not so good as was hoped, yet the working profit obtained, amounting to £245,319, showed a substantial improvement, being £87,219 more than the working profit for 1920.

Two Adverse Factors.

The decrease in the tonnage milled during the year was due to two adverse factors, viz. the electric hoist at the south vertical shaft, which was originally intended to be in commission in February last, was not ready, owing to late deliveries, until the end of the year, and the other was the shortage of native labour. Randfontein has not been a popular mine with natives for some time, owing chiefly to the steepness of the reefs and the climbing that had to be done in the southern section of the mine. Underground conditions are more attractive in the flatter mines of the Far East Rand. During the year the native labour strength never reached more than 59 per cent. of the complement allotted to the mine by the Complements Committee. Generally speaking, the supply of native labour on the mines of the Rand was excellent throughout the year, and probably Randfontein was the only mine which suffered severely. Conditions have now been materially improved underground, and everything possible is being done to improve the reputation of the mine amongst the natives, but the natural handicap owing to the steep reefs will always remain. The value of the stores on hand at 31st December, 1920, amounted to £174,164, and at the end of 1921 the value was £187,054, but this figure includes an amount of £70,400 for plant and machinery, which had been delivered but not erected at the end of the year. In the northern section, Nos. 8 and 9 shafts were closed down during the year, but mining was continued throughout the year on the East Reef, where the workings are shallow and working costs low. Although the grade of the ore won was low, a small profit was obtained from this section due to the premium on gold.

The Battery Series.

The two incline shafts started on the Battery series, known as the north and south Battery shafts, were sunk respectively 355 feet and 463 feet. A considerable amount of development was accomplished on this series, and a certain amount of ore for the mill was produced from August onwards. The opening up of this section should prove of considerable advantage to the mine. The development has so far realised expectations, the two reefs showing a payability of about 60 per cent. The south shaft was connected with the 1st level, and we hope shortly to increase the tonnage from this section. The permanent headgear and ore bin at each shaft are being erected, and a railway track is being laid to connect the shafts with the main transport system to the mill. In order to take advantage of the prospecting work which has been done previously, the first level will be at an incline depth of 300 feet, and the second level 175 feet lower.

Pumping Plant.

The main pumping plant at the 18th level of the north vertical shaft has worked satisfactorily. Owing to the fact that the southern workings are lower than the northern workings a temporary intermediate pumping station is being equipped at the 23rd level, which will pump the water from the southern section to the main pumping station at the 18th level. The intermediate pumping plant is expected to be in operation about April next and will complete the new pumping scheme. As already mentioned, the installation of the new electric hoist at the south vertical shaft was completed in December last, and the hoist for the north vertical shaft is delivered and being erected. In the meantime the capacity of the shaft has not suffered, as the steam hoist installed has been sufficient to handle all the ore available up to the present. A 300-drill steam turbo compressor is on order, and it is expected that it will be erected during the current year.

Development.

Development was pushed vigorously during the year. The total linear footage accomplished amounted to 47,978 feet, as compared with 39,937 feet in the previous year. It will be gathered from the manager's report the results obtained were satisfactory. The ore reserves were recalculated at the end of the year, and are estimated at 4,142,100 tons, of an average value of 6·2 dwts. over a stoping width of 49 inches—this quantity includes all ore of a value of 5 dwts. and over.

Another British Trade Ship.

Some time ago arrangements were completed for the building of a special vessel to act as a floating exhibition of British manufactures. For various reasons the voyage of this ship has been postponed for a year or two. Meanwhile, a large British liner has been acquired for the purpose of being converted into a trade ship. The cabins will be used for the accommodation of the representatives, and the holds and other portions of the vessel will be adapted for exhibition purposes.

New State Areas.

GOVERNMENT INSPECTOR'S REPORT.

Mr J. H. Twaddy, the Government Inspector of Mining Leases, has issued his reports for the last quarter of 1921 on the Daggafontein Mines, the Craigie Mines and the New State Areas. From the report on the last named we take the following:—The North Shaft footage sunk during the year amounted to 182 feet, to a total and final depth of 3,768 feet, the shaft being timbered to the bottom. The landing station at reef level, together with the approaches, rock passes, and storage bins are completed, with the exception of their equipment. Provision is made for keeping separate the reef from the waste rock, and the storage capacity for each class of rock will be 2,500 tons and 450 tons respectively. The South Shaft footage sunk during the year amounted to 116 feet to a total and final depth of 4,071 feet, the shaft being timbered to the bottom. There are two stations at this shaft, the upper at reef level and the lower about 200 feet below. All work in connection with these stations, including the approaches, rock passes, and bins, is completed, with the exception of one ore pass, which is not yet connected. The permanent station and bin equipment is still to be carried out. Provision is also made at this shaft for separately handling the reef and waste. The total storage capacity for reef will be 3,500 tons, and for waste 1,420 tons.

Development.

A summary of the development work for the year is as follows:—Drives, 5,224 feet; raises, 2,691 feet; winzes, 2,036 feet; crosscuts, etc., 6,068 feet; total, 16,019 feet. Of the total footage developed, 2,623 feet were in connection with the lay-out of the shaft stations, which work is now practically completed.

North Shaft.—It will be recalled that when the reef was struck in this shaft it was much disturbed and carried the very low value of 0.85 dwt. The development so far carried out to the north-west of the shaft has shown the reef values to have considerably improved, although no payable body of ore has yet been indicated. In the 22nd level, both east and west of the main connection between the two shafts and about 550 feet south of the shaft, reef of fair average payable value has been exposed. This body has so far been proved on strike for a distance of from 800 feet to 900 feet.

South Shaft.—The development on reef at this shaft has been quite satisfactory. Unfortunately a considerable amount of faulting has taken place, necessitating a lot of dead work. The reef exposed to the south, east, and north-east of the shaft is of good payable value. Owing to faulting, less work has been carried out to the west of the shaft, and the reef where exposed has been of a lower value. Altogether 88.1 per cent. of the reef exposure is payable, being of an average value of 708 inch pennyweights. At the end of the year there still remained a distance of 1,450 feet to be traversed to connect up the two shafts. This main connection is being driven on even grade and, owing to faulting, has been practically off reef throughout its course. All development ends are well ventilated by means of galvanised iron tubes, the air being exhausted through the tubes by electrically-driven fans. There is one fan at station level of a capacity of 30,000 cubic feet per minute, which forces the foul air up a specially lined out compartment of the shaft forming the upcast. On surface there is another electrically-driven fan of 45,000 cubic feet capacity, and when necessary these fans are run in tandem. In principle, the ventilation is the same as that at the West Springs Mine, tubes being used as the return airways instead of a portion of the drive being walled off for this purpose.

Capital Expenditure.

The capital expenditure for the year amounted to £354,800, made up as follows:—Shafts and equipment, £68,729; development, £175,276; buildings, £34,332; machinery and plant, £73,892; other surface works, £2,571; total, £354,800.

Equipment.

The principal additions to the equipment of the property made during the year are:—At South Shaft: Extension of compressor house and installation of a 35-drill capacity and a 50-drill capacity compressor, the latter being electrically driven, additional cooling reservoir, extension of boiler house and additional 250 h.p. boiler, carpenters' shop, men's change house, rock drill repair shop, two staff quarters, six workmen's cottages, extension to fitters' and smiths' shop, drill-sharpening shop, and native compound. At North Shaft: Men's change house, additions to drill-sharpening shop and to native compound.

General.

It has been decided to proceed with the erection of a reduction plant of an initial capacity of 50,000 tons a month, so designed that extension can take place without disturbing existing arrangements. The plans have been prepared, the necessary machinery and plant is being purchased, and preliminary work on the property at time of writing is commenced. It is anticipated that the plant will be erected and ready for commission well before the middle of the year 1923. As the result of experiments in tube-milling carried out at the Brakpan and Springs Mines, in which the company participated (through the Johannesburg Consolidated Investment Company, Limited), it has been considered justifiable to depart from the hitherto standard practice on these fields of installing gravity stamp mills for the intermediate crushing stage, and all intermediate crushing, as well as fine grinding, will be performed in tube mills. The preliminary course crushing will be performed, as is usual, by rock breakers, but the product delivered to the tube mills will be smaller in maximum gauge than that usually produced for stamp mills. The process of gold recovery by amalgamation on plates will be dispensed with. All the ore will be reduced to slime, and treated by the cyanide process only, the gold in the cyanide solution being precipitated by means of zinc dust in lieu of zinc shavings. The elimination of stamp mills and amalgamating plates materially reduces the initial capital outlay. In the design of the plant several new features have been introduced, and modifications and improvements resulting from recent practical metallurgical experience and experiment have been embodied. A feature of no small importance accompanying the design and eventual working of the plant is that the gold, in whatever form during its process of extraction, will be handled by far fewer operatives than is the case with the ordinary process of plate amalgamation and precipitation by zinc shavings, and, therefore, the risk of loss through theft becomes considerably reduced. Provision is made on surface for dumping separately the reef and waste rock from the development ends, and at such time as milling operations may commence the former can be recovered and sent to the mill. The average number of coloured persons at work during the year was 1,006, during the last month of the year the number was 1,600. Viewing the work as a whole, good progress has been made during the year.

GOVERNMENT EXAMINATIONS.
METAL. RESULTS, 1921. COAL.
Total METAL MANAGERS Certificates
Granted in S.A., 1921 36
Secured by Students of Messrs. LUCAS & WOLFE .. 21
Balance for S.A. . 15
7 COAL MANAGERS Certificates obtained in 1921.
Total OVERSEERS Certificates (Metal and Coal)
Granted in S.A., 1921 61
Secured by Students of Messrs. LUCAS & WOLFE . 35
Balance for S.A. .. 26
Total SURVEY Certificates
Granted in S.A., 1921 11
Secured by Students of Messrs. LUCAS & WOLFE . 9
Balance for S.A. .. . 2
C. D. LUCAS & B. E. WOLFE,
MINING ENGINEERS
OFFICES & LECTURE ROOMS: PERMANENT BUILDINGS.
Postal Address: Box 6301. JOHANNESBURG

DIXON'S GRAPHITE PIPE JOINT COMPOUND

DIXON'S COMPOUND is a revelation to those who have never used it before. The ease with which threaded joints can be screwed up tight, and also the ease with which joints can be opened, is a pleasant surprise to the man who has previously used red lead or other common form of joint cement.

It is not necessary to "cement" joints to make them tight; Dixon's lubricates the threads and therefore permits joints to be taken up even tighter than is possible otherwise. Furthermore, Dixon's Graphite Compound does not harden or "set." Whole lines of piping can be quickly taken down and put together again without the necessity of smashing a single fitting. Joints made up with this compound cannot rust, corrode or stick, but may be opened without difficulty after any length of time. Fittings can be used repeatedly. There is no waste of time or materials.

One pound of Dixon's Joint Compound is equivalent to about four pounds of red or white lead, mixed, and is therefore less expensive. It is also non-poisonous. To use ordinary pipe dope is not economical nor is it good engineering practice.

[illegible]

Made in Jersey City, U.S.A., by the

JOSEPH DIXON CRUCIBLE Co.

Established 1827.

Graphite Crucibles, Flake Graphite, Boiler Graphite, Silica-Graphite Paint, Pipe Joint Compound, Cup Greases, Waterproof Greases, Belt Dressing.

Foreign Sales Agents:

WALWORTH INTERNATIONAL CO.,

NEW YORK CITY.

Offices in all Principal Cities.

P.O. Box 3662. Johannesburg. 'Phone 3195.

"HUMBLE" SAFETY DETACHING HOOK

SOLE AGENTS:

GEO. CRADOCK
—AND CO. (S.A.), LTD.—
75-77, CULLINAN BUILDINGS.

P.O. Box 316. Telephone 539.
Tel. Add.: "ROPES."
JOHANNESBURG.

REID BROS.
— (S.A.), LIMITED. —

Sole Agents for:

CARRON COY.—HAULAGE GEARS, Etc.
ANDERSON, BOYES & COY.—ELECTRIC COAL CUTTERS.
HARDY PATENT PICK COY.—"HARDIAX" AIR COAL CUTTERS.
BLANTYRE ENGINEERING COY.—SCREENING PLANT.
WM. ARNOTT & CO.—CORNISH AND LANCASHIRE BOILERS.
QUASI-ARC ELECTRIC WELDING APPARATUS.
SMALL & PARKES—BELTING, PACKING, Etc.
FINNEY PATENT HAND PUMPS.
WELDLESS STEEL CHAINS.
CHAPMAN DOUBLE BALL BEARINGS.

JOHANNESBURG.
P.O. Box 802 'Phones 6070/1
AND AT DURBAN.

The South African Mining and Engineering Journal.

HEAD OFFICE: 176-180 Stock Exchange Buildings (2nd Floor), Fox Street, JOHANNESBURG, Union of South Africa.

Telephone **913.** P.O. Boxes **963** and **4573.**

Cables and Telegraphic Address: "MINING JOURNAL."

ANNUAL SUBSCRIPTION RATES: Oversea, £2; Union of South Africa and Rhodesia, £1 10s.; Local Delivery (Town only), £1 6s., payable in advance.

AGENTS FOR GREAT BRITAIN AND AMERICA: Argus South African Newspapers, Ltd., Byron House, 82-85, Fleet Street, London, E.C. 4.

Copies of this Journal are obtainable at all Branches and Agencies of the Central News Agency, Ltd., at all News Agents and Railway Bookstalls throughout South Africa, and at the London Agency as above.

CONTENTS.

	PAGE
Southern Africa's Coming Industry	1115
The Year with the Barnato Group	1118
Van Ryn Deep Results	1119
Chromite for the Manufacture of Verro-Chrome	1120
Metals and their Names	1122
Transvaal and the S.A.R.	1123
New State Areas	1124
Randfontein Central	1126
The State Mines' Record Year	1127

Editorial:

When the Mills were Silent	1129
The Barnato Group	1129
Busy Man's Page	1133
Knight Central's Life	1135
Kolmanskop Diamonds	1136
Finance and Information for Investors	1137
Share Market	1138

Engineering Section:

The Blackman Keith Centrifugal Fan	1139
The Rand Water Board and the General Strike	1141

Rhodesian Section:

Rhodesian Railway Finance and Engineering...	1142

Trade and Industries Section:

The Week in the Mining Material and Engineering Trades	1144

EDITORIAL.

WHEN THE MILLS WERE SILENT.

The output and profit and loss figures of the industry for the first three months of the year which cover the time of the strike and the revolution, have now been published, and they afford figures which are strikingly impressive—we apologise for the unintentional pun. During the period in question gold mining on the Witwatersrand suffered by far and away the longest and most serious interruption—with the exception of the Boer War hiatus—that has ever broken its glamorous and kaleidescopic history of little more than a third of a century's duration, and special interest therefore attaches to the figures published in respect of the weeks when the mills were either silent or were murmuring under difficulties. The gold output for the quarter has been declared by the Chamber of Mines as follows: Witwatersrand, 594,788 fine oz.; outside districts, 44,940 fine oz.; grand total, 639,728 fine oz. The entire total for the three months is between 70,000 and 80,000 oz. less than the average for a normal month. According to group figures operations during the quarter resulted in losses totalling £1,124,640. Of the six groups only one, the Union Corporation, showed a net profit—the Geduld Proprietary Mines returned a loss of £20,192, while the Modderfontein Deep Levels made a profit of £52,874. The total losses of the other groups are as follows: Central Mining/Rand Mines,, £626,133; Barnato, £242,316; Consolidated Mines Selection, £107,838; General Mining, £95,776; Gold Fields, £85,259. The statistics published by the groups, depressing as they are from the point of view of the heavy losses incurred, are not as bad as it was anticipated they would be. It is particularly interesting to note that five mines—three of them Modders by the way—managed to earn profits. In this respect that wonderful mine in which the State is a co-partner—the Modderfontein Government Areas—led the way with an excess of revenue over expenditure amounting to £52,911. Next to this comes the Modder Deep, which earned very nearly as much, namely £52,874, and the New Modder comes third with £38,695. Another Far East Rand mine in the Van Ryn Deep paid its bills and was a little over £1,000 to the good; whilst that wonderful old Central Rand proposition, the Meyer and Charlton, made a profit of £6,253. These are exceptional mines, possessed of immensely rich reserves of super grade ore, which can be drawn on in a period of adversity. The other side of the picture is drawn by propositions like the Randfontein Central and the East Rand Proprietary, two huge ventures which hitherto have existed mainly for the benefit of employees, merchants and the Government, and which between them lost over £300,000 during the period of the dispute. No good purpose can be served by reviewing all the destructive aspects of this calamitous business, or in pointing out that the European employees themselves were the principal sufferers. The industry is now steadily recovering from the effects of the disaster. This in itself is a tribute to the stability of the Rand gold mining industry. Things on the mines may not yet be quite so satisfactory as they might be, but it is significant that well-informed authorities in London take a hopeful view of the situation, as is clearly indicated by rising sharemarket prices. The great thing to hope for is, of course, that the whole country has learnt its lesson and that it is generally realised that although silence is usually reputed to be golden, silence on the part of the mills of the Witwatersrand holds no glamour and implies nothing but penury for the whole country. The consequences of the strike will, naturally enough, be felt for a considerable time. But unemployment along the Reef might easily be greatly relieved if more native labourers were forthcoming. In this connection attention may once again be directed to the fact that although the Low Grade Mines Commission reported several months ago in favour of recruiting from northern latitudes, nothing has yet been done to secure natives from the great reservoirs of labour in Nyasaland, Northern Mozambique and Tanganyika. We understand that the Unemployment Commission has made a similar recommendation, and in all probability the recently appointed Industrial Commission will arrive at the same view. But for some extraordinary reason the Government does not remove the unreasonable embargo upon the importation of natives from these territories, which contain thickly-peopled high-lying plateaux with climatic conditions not dissimilar from those existing on the Rand. If conditions not dissimilar to those existing on the Rand. If the Government desires to relieve unemployment, let them raise the blockade of the northern labour areas. This would do far more to improve the situation in regard to the out-of-works than half-a-dozen commissions.

THE BARNATO GROUP.

The annual meetings of the Barnato group of companies will be held early in June, and extracts from the annual reports are published in this issue The finances of the different companies are summed up in the abridged statements from the directors' reports, and the year's operations as covered in the annual reports of Prof. Lawn, the consulting engineer and joint managing director of the group. Copious quotations from Prof. Lawn's reports appear elsewhere in this issue illustrative of the position of the mines of the group. That of the State Mines is naturally given precedence, and it should commend itself to the Government and the fortunate shareholders as eminently satisfactory. It will be noted that in addition to making a working profit of £1,070,309 the premium on gold brought in £692,181 making a total working profit of £1,762,490 for the year, as compared with £1,708,164 for 1920. This, of course, constitutes a record for the company. The shareholders received £770,000 and the Union Government £896,210 out of these profits, and after allowing for profits appropriated for capital expenditure a sum of £[illegible] remains to be carried forward. Contrary to expectation, the price of stores per ton have not fallen, due to the increased railway rates on coal, mining poles and explosives. Under this head Prof. Lawn enters a strong plea for relief, and he shows that the increased rates paid on these items represents a heavy direct tax on the mines. Though Prof. Lawn's protest is embodied in the State Mines' report, it applies to all the mines and affects even more seriously the low-grade ones. The subject, let us hope, will merit the attention of Parliament when the estimates come up for consideration. In regard to the ore reserves of the State Mines, it is noteworthy that they are practically the same as at the end of the previous year, though they show a slight increase in the average value. Another important point is that all the development to the west of the mine has been good, and on the whole development has been satisfactory. At the Randfontein Central, shortage of native labour and delays with the new equipment caused a decrease in the tonnage milled during the year. Development on the Battery Series has so far realised expectations, and development generally was vigorously carried out during the year with satisfactory results. As regards the year's operations, although the results obtained during the early part of the year were not so good as was hoped, yet the working profit obtained showed a substantial improvement on the preceding year. The Van Ryn Deep's profits, including the proceeds of the gold premium, reached the magnificent total of £922,918, which was a record for the company. Development in the western section of the mine was satisfactory. The strip of ground on the eastern boundary was explored during the year and ore of a high grade exposed. The ore reserves show a slight increase, but the average value is slightly reduced owing to the inclusion of ore developed in the western section of the mine and to a slightly increased stoping width. The proposed reduction plant for the New State Areas has already been described in our pages, and the chief feature of the consulting engineer's report is the satisfactory opening up of the mine. At the Consolidated Langlaagte the development footage during the year was somewhat less than during the previous year; the values were better than had been anticipated, with the result that the ore reserves show a slight increase. At "Knights" the ore reserves show a substantial reduction because very little payable ore was developed during the year. Prof. Lawn says: "With the low value of the ore reserves, the prospect of continuing to work at a profit largely depends on our being able to reduce working costs." Langlaagte Estate shows reduced ore reserves due to the fact that "the ground near the main shaft was very much disturbed by dykes and the ore developed there was of low grade." The New Unified is nearing the end of its tether, the period for which the mine will run depending on the gold premium and what reduction can be obtained in working costs. The New Primrose is in a similar position. Under favourable conditions it may run for a year or two, but if conditions are otherwise the mine may have to close down as "there is practically no reserve to fall back upon." It will be seen that the keynote of all the reports of the older Barnato mines is the need for the reduction of working costs if they are to be kept going much longer.

The South African Mining and Engineering Journal Annual, 1922. A Yearly Review of the Mineral Industries of Southern Africa.

The South African Mining and Engineering Journal's 1922 Annual will be a Special £1,000,000,000 Number. It is to be issued towards the end of the year in celebration of the achievement of production of minerals to the aggregate value of one thousand million pounds sterling. It will be a complete illustrated Year Book containing all facts and figures relating to the South African mining industry, its statistics, technology and trade. It will be replete with valuabe maps, diagrams, mine plans and statistical annexures, compiled by experts, price 10s. 6d., postage extra. In 20 parts, all complete in one large and handsomely produced volume.

Sub-Section A.—Union of South Africa.

Part I.—The Gold Mines of the Witwatersrand. Historical—Outlines of Geology.

Part II.—Witwatersrand (continued). Evolution of Technical Practice Underground and at Surface.

Part III.—Witwatersrand (continued). Economics—Labour Questions, etc.

Part IV.—Other Goldfields of the Union: Lydenburg, Barberton, Zoutpansberg, Heidelberg, Klerksdorp, etc.

Part V.—The Diamond Fields of the Union of South Africa.

Part VI.—Diamond Fields (continued). Technical Practice, Economics, Alluvial Diggings, South-West African Fields.

Part VII.—The Coal Industry of the Union. Outlines of History and Geology.

Part VIII.—Coal Industry (continued). Technical Practice, Outputs and Analysis, Trade Problems.

Part IX.—The Iron and Steel Industry.

Part X.—Base Metals, etc. Copper, Tin, Asbestos, Lead and Argentiferous Galena, Mica, Corundum, Talc, Sulphur, etc.

Sub-section B.—Rhodesia, Belgian Congo and Portuguese East Africa, etc.

Part XI.—The Gold Mines of Rhodesia. History and Geology. Technology—The Large and Small Producers—Liberal Mining Laws.

Part XII.—Other Minerals of the B.S.A. Company's Territories. Coal, Asbestos, Chrome Iron Ore, Mica, Northern Rhodesia's Minerals.

Part XIII.—The Great Katanga Copper Belt. Copper, Tin and Gold, History, Geology, Technology, Statistics and Trade.

Part XIV.—The Congo Diamond Fields.

Part XV.—Mineral Fields of East Africa. Gold, Coal, Tin and Copper in Mozambique.

Part XVI.—Oil and Oil Shale Fields of Southern Africa.

Part XVII.—Industries Subsidiary to Mining. Engineering, Cement Works, Pipes, Explosives and Chemical Works, etc.

Part XVIII.—Statistics of Production, Dividends, etc. Share Market Prices.

Part XIX.—Who's Who in the Mining Industry.

Part XX.—Railways, Harbours and General Transport by Road and Rail.

The total value of the mineral productions in the Union of South Africa has now reached an aggregate of over a thousand millions sterling. This gigantic sum represents the grand total value of the output of gold, diamonds, coal, copper, tin and other minerals since the sommencement of mining operations on an important scale in South Africa fifty years ago.

To this may be added the total value of the minerals produced in Rhodesia during modern times, which to date has been about sixty millions sterling.

If to this be added the value of the mineral production of the Belgian Congo, the South-West Protectorate, and one or two other territories, a grand total of something like eleven hundred million pounds for Africa south of the equator is arrived at.

These figures serve to indicate the importance of the mineral industry of South Africa, and the globular totals given above would of themselves form sufficient justification for the publication of a work which the *Mining Journal* intends to make its *magnum opus*. But, stupendous as are these productive achievements, it is indisputable that there is promise of even greater output and activity in the future.

Southern Africa produces practically the whole of the world's diamonds, and more than half of the world's gold, and a large portion of the Special Annual Number will naturally be devoted to the history, present position and prospects of these important industries. The coalfields, copper, tin and asbestos mines and vast deposits of iron ores and the immense tonnages of oil shale existing in the sub-continent all foreshadow a great expansion of the mineral industry.

At the moment South African mining industry is recuperating from the effects of the strike and the revolution, but there are unmistakable signs that conditions are improving, working costs will be reduced, efficiency will be improved, and there will be freedom from Federation tyranny, and it is a reasonable assumption that by the time this important work is published there will be a big revival of mining activity. No such important and comprehensive work on the mineral industry of South Africa as this will be has been published. The Annual will constitute a complete and authoritative history of mining in the sub-continent, and the chapters dealing with the earlier discoveries and their development will contain interesting reminiscences written by pioneers. These portions of the work will contain several hitherto unrecorded incidents in the history of mining, and will be brimful of personal recollections of the men who laid the foundations of the mineral industry at Kimberley, Pilgrim's Rest, and Barberton, and on the Witwatersrand and in Southern Rhodesia. The Annual will constitute a complete and authoritative work of reference in respect of all the known mineral deposits of Africa south of the equator, and of the companies and individuals associated with the discovery and development.

Applications for copies and for advertising spaces should be addressed to the Business Manager, *South African Mining and Engineering Journal*, Box 963, Johannesburg.

Notes & News.

Pietersburg Minerals.

An interesting feature of famous exhibits from the Pietersburg district is the collection of minerals. Naturally, Messina specimens are given place of honour, but the district has many other promising prospects. Messrs. Chamberlain and Setterfield contributed fine samples of corundum in various forms, and the Malips Drift Asbestos Company asbestos in its natural state and in various forms after milling. Fine slabs of mica were also in evidence, and samples of cut mica of various grades. These were from the Treadwell Syndicate. Amongst the minerals shown in a cabinet was a small slab of tin, which had formed a portion of the first bar of tin made from tin smelted in the district. Included in the minerals were the balas rubies which, of course, have no commercial value, but, it is hoped, a use may be found for them in the future.

* * *

Afrikander Lease.

Favourable reports of progress at the Afrikander Lease continue. The unwatering of the mine is in progress, and preparations are being made for hauling ore. It has been decided not to erect the mill on the kopje, as originally intended, but to back the additional ten stamps immediately behind the ten stamps now in position in the original battery house. The excavations for the new ten stamps are practically completed. The sites for the sands and slimes tank are ready, and it is expected that the vats will shortly arrive. Had it not been for delays occasioned by the recent Rand strike the plant would be very near completion.

* * *

The E.R.P.M. Outlook.

The annual meeting of the E.R.P.M. will be held on May 18, and the annual report to be submitted on that occasion is none too cheerful a document. The most serious feature is the statement by the consulting engineer, Mr. A. J. Brett, that " the company cannot continue mining on any scale whatever unless working costs, which now exceed revenue at the present price of gold, be considerably reduced. Compared with the operations of the preceding year the tonnage milled records an improvement of 46,000 tons and working costs a decrease of 11d. per ton milled. The yield obtained, however, shows a decline of ·223 dwt. per ton milled which with the lower price received for gold equals a reduction of revenue of 2s. 7d. per ton milled. The working profit, which is wholly due to the price of gold having ruled above standard during the year, shows the serious decrease of 1s. 8d. per ton milled; at the standard price operations would have resulted in a heavy loss. Development operations record a further increase in footage accomplished, but in view of the quite unpayable values hitherto disclosed in the lower levels of the central area, were confined to the Western Section served by the Farrar Secondary Incline Shaft and the incline below the Angelo Deep West Vertical Shaft and to the Eastern Section known as the Eastern Section known as the Cason Cinderella Section. The results obtained in the Eastern Section were disappointing, but in the Western Section values above the average value of the ore reserve were disclosed over satisfactory distances with indications of possible extension eastwards towards the Angelo Deep east shaft. The payable tonnage developed during the year shows a considerable decrease compared with the preceding year. This shortfall, combined with the other factors enumerated in the consulting engineer's report, caused a decline in the ore reserve of 464,200 tons, although with an improvement in average value of ·6 dwt. per ton. The diminishing ore reserve, the high working costs and the decline in the price of gold, combine to render the outlook for the company critical and uncertain. Every effort has been made during the year to reduce operating costs in all directions, but a further substantial reduction is imperative if operations are to continue. The reports issued by the Commission of Engineers appointed by the Government to inquire into the question of lengthening the life of the mine have been issued to shareholders annexed to the proceedings of the last ordinary general meeting. The directors report that they have been unable to conclude any arrangement with adjoining companies such as suggested by the Commission and that Government assistance has as yet not been forthcoming."

* * *

Technical Journals Merged.

The *Mining and Scientific Press* has been sold to the McGraw-Hill Co., Inc., New York, and will be consolidated with the *Engineering and Mining Journal*. The first issue of the consolidated papers appeared on April 1 as the *Engineering and Mining Journal-Press*. We extend to our augmented contemporary hearty congratulations on this consolidation of two most valuable mining periodicals, and wish the *Engineering and Mining Journal-Press* all good fortune in the future.

The Grootvlei Coal Mine.

According to the *Heidelberg News*, the Grootvlei mine [illegible] Rand Collieries is to be congratulated upon the fact that it went through the strike period with as little ill-feeling as possible. Most of the employes struck against their will in obedience to the orders of "organised labour." There were, however, some extremists about who assisted in the "upheaval." (Probably these now find themselves among the seekers for "pastures new.") Both on the part of the employes and on the the part of the manager (Mr. Creed), a kindly spirit was maintained with those exceptions. It has been notorious for years past that Grootvlei was not a very paying proposition. Indeed, it has at times been a question whether the mine was worth running, except for the benefit of the employes, surface and underground. This has been particularly the case during the somewhat lengthy period of high prices and big wages which occurred during and after the great war. The advent of a lower scale of expenses relieves the position, and if it could have been brought about without the "upheaval," the company would now be reaping some little benefit therefrom. Unfortunately, however, the strike cost the company a lot of money. It is estimated by the manager that it will take about two years before the property recovers its position and begins to show a clear profit. If it were not for the lowering of costs a close down would be the simplest solution at the present moment, but with costs reduced there is a reasonable prospect of a healthy recovery.

* * *

Cornish Miners.

So much malignant mud has been thrown around in the House of Assembly recently that it is impossible to refute all or even a small portion of the libels and calumnies which have been gratuitously scattered by the Nationalists and Labourites. But inasmuch as this is a mining paper, we cannot refrain from protesting against the unwarranted attack upon Cornish miners by Mr. Munnik, M.L.A. for Vredefort. The Cornish miner may have had his faults, but he knew his job and he worked hard and well. Not only in South Africa but in nearly every part of the mining world "Cousin Jack" has been the pioneer of mining, and few people of unbiassed minds will attempt to deny that the Rand owes a great deal to the men from the delectable Duchy who knew how to break ground and who never indulged in such despicable occupations as revolutions and the assassination of harmless natives. Mr. Munnik is reported to have said that the old type of Cornish miners did nothing but run round the canteens, and he held up the present employees of the mines—or rather the employees of the pre-revolution period—as examples of diligence and economy. We will not deny that there are still—thank God—a considerable number of good class workmen on the Rand, and many of these hail from the extreme west of England. But, on the other hand, we know, probably from a closer acquaintance with the true facts of the case than the member for Vredefort can lay claim to, that a large number of the class of miners which Mr. Munnik seeks to champion would never be allowed to work more than one shift in any other mining field. During the Great War Cornwall not only sent her full quota of sons to fight on sea and land, but the tin miners who stayed at home never went on strike or checked the work of the Ministry of Munitions. Cornwall has witnessed hard times lately. Many hundreds of good miners have been out of work, and whatever Mr. Munnik's opinion of the Cornish miner may be, we feel quite convinced that the Rand would be all the better if more of these men were on the pay-rolls of the mines.

* * *

Lead in South Africa.

The latest publication of the Imperial Mineral Resources Bureau deals with lead. Copies of the report may be obtained from H.M. Stationery Office, price 3s. 2d. post free. An interesting chapter deals with lead occurrences in South Africa, from which we take the following:—

Rhodesia.—Ores of lead are known to occur at several localities in Rhodesia, and argentiferous galena is a frequent constituent of many of the gold-bearing lodes, notably in the Umtali district. The deposits of lead and zinc in the Rhodesia Broken Hill mines are of considerable importance. The property is situated close to the railway about 350 miles north of the Victoria Falls. The deposits were first discovered in 1902, but owing to the remoteness of the district mining operations were not placed on a permanent basis until 1914. They consist of dolomitic limestone impregnated with cerussite and calamine with which are associated phosphate, vanadate, and, to a lesser extent, arsenate of lead. Very little silver is contained in the ore. Systematic boring carried out during 1918 has proved that the oxidized ores give place to rich sulphides in depth. The estimates of ore from the main bodies so far proved show about 210,000 tons averaging 24 per cent. zinc, 2·5 lead, and 0·5 vanadic acid, and about 305,000 tons averaging 27 per cent. zinc, 10·0 lead, and between 0·5 and 1·0 vanadic acid. A small experimental furnace was erected on the property and commenced work in the year 1915; it continued in operation until June, 1917, when two new modern furnaces were installed and operated successfully on high-grade picked ore. The slags averaged about 19 per cent. SiO_2, 45 per cent. FeO and 18 to 20 per cent. ZnO, and they were liquid with 25 per cent. ZnO. No zinc was smelted on the property pending the application of a suitable process for extracting it from the oxidized ores. In Southern Rhodesia the Penhalonga mine in the Umtali district produced lead up to November, 1914, when the mine was shut down owing to difficulties arising out of the European War. A little lead was produced from tailings during 1915, since when there has been no output from this property.

South-West Africa Territory.—The copper-lead zinc-silver ore deposit of Tsumeb in the Grootfontein district of South-West Africa Territory is one of the most important base metal deposits in South Africa. The ore occurs in the Otavi dolomite in lenses, having a combined length of 550 feet. The width of the ore-bodies varies from 46 to 80 feet. In depth the ore is a crystalline aggregate of argentiferous galena, zinc-blende, chalcopyrite, chalcocite and pyrite. Mottramite (copper-lead vanadate) also occurs in considerable quantities. Before the War the high-grade copper ore was shipped to the United States for treatment, the lead ore and low-grade copper carbonate ore being smelted locally to a matte containing 45 to 50 per cent. of copper, 25 to 30 per cent. of lead, and from 15 to 18 oz. of silver to the ton. This was exported to Germany for further treatment. Smaller deposits of copper-lead ore occur at Gross Otavi, Asis, Asis East, Guchab and Bobos and other localities in the Otavi Mountains.

Union of South Africa.—Lead ores occur in South Africa in the limestones and dolomites of the older geological formations. In the Transvaal, true veins carrying galena often associated with gold, silver, copper and cobalt are found in the Pretoria series. In the Rustenburg, Marico, and Pretoria districts there are many deposits carrying copper and lead, the best known being the Transvaal silver mine in the Pretoria district. Here the ore occurs associated with a "diabase" dyke, the ore minerals being argentiferous galena with copper- and iron-pyrites, some carbonate of copper, and tetrahedrite. Other deposits from which small amounts of lead have been mined are the Leeuwkloof mine in the Pretoria district, and the Rhenosterhoek mine in the Marico district. The lead-mining operations in the Transvaal during the period under review appear to have been intermittent, and of small commercial importance. There were no exports of lead from South Africa during the period under review, other than a few hundred tons shipped to the United Kingdom during the years 1916 to 1919, and an occasional small consignment to Portuguese East Africa. Re-exports consisted of a few hundred tons shipped mainly to the United Kingdom, and a consignment of three tons to Portuguese East Africa.

THE BUSY MAN'S PAGE.

What to Read in the Technical Press.

Mining and Metallurgy.

Spontaneous Combustion in Mines — Iron and Coal Trades Review, March 17, p. 376.

Iron and Steel.

International Steel Syndicates.—Iron and Coal Trades Review, March 17, p. 387.

Grinding Machines for Chilled Iron Rolls.—Engineer, March 17, p. 306.

Coal.

The Fuel Problem. — Iron and Coal Trades Review, March 17, p. 381.

Fuel Value of Lignite.—Colliery Guardian, March 17, p. 676.

Engineering.

Large versus Small Power Stations.—Iron and Coal Trades Review, March 17, p. 389.

From Pony to Mechanical Haulage.—Iron and Coal Trades Review, March 17, p. 375.

The Engineering Crisis.—Iron and Coal Trades Review, March 17, p. 389.

Developments in Power Station Design.—The Engineer, March 17, p. 290.

Factory Size and Efficiency.—Engineer, March 17, p. 292

Agricultural Engineering in the U.S.A. — Engineer, March 17, p. 303.

Single Link Chain in Cage Suspension.—Colliery Guardian, March 17, p. 674.

Electricity.

Situation of the German Electrical Industry.—Electrical Review, March 17, p. 363.

The Whitely System in Electrical Supply.—Electrical Review, March 17, p. 364.

Two-wattmeter Method of Measuring Power.—Electrical Review, March 17, p. 366.

Rotary Converters and Railway Electrification.—Electrical Review.—March 17, p. 391.

Oil and Oil Shale.

Shale Oil.—Engineer, March 17, p. 303.

Oil Prospecting in Australia.—Engineer, March 17, p. 309

Economics.

Ideals in British Coal Mining.—Iron and Coal Trades Review, March 17, p. 383.

Crane Costs.—Iron and Coal Trades Review, March 17, p. 384.

Forthcoming Technical Society Meetings.

Geological Society.

The postponed monthly meeting of members of the Society will be held in the Main Hall, 1st Floor, Scientific and Technical Club, 100 Fox Street (between Rissik and Loveday Streets), Johannesburg, on Monday, 24th April, 1922, at 8.15 p.m. The minutes of the ordinary monthly meeting of members held on 9th January, 1922, will be read. New members. The following papers will be open for discussion:—" Note on the Rocks from Adriaans Kop, South of Pietersburg," by A. L. Hall, M.A., F.G.S.; " The Igneous Complex of Leeuwfontein, Pretoria District," by S. J. Shand, D.Sc., Ph.D.; " Recent Additions to Our Knowledge of the South African Coalfields," by E. T. Mellor, D.Sc.; " The Konkip Formation on the Borders of the Namib, North of Aus," by P. F. W. Beetz, Ph.D. The following papers will be read: " Note on Pygocephalus from the Upper Dwyka Shales of Kimberley," by Henry Woods, F.R.S. (communicated by A. W. Rogers, Sc. D., F.R.S.); " On the Marundites and Allied Corundum-bearing Rocks in the Leydsdorp District of the Eastern Transvaal,' by A. L. Hall, M.A., F.G.S.

Chemical, Metallurgical and Mining Society.

The ordinary general meeting of the Society will be held in the Scientific and Technical Club, 100 Fox Street, Johannesburg, on Saturday, the 22nd inst., at 7.45 p.m. Contributions to the several discussions are welcomed, and may be read at the meeting or handed to the secretary for publication. Agenda. Minutes of ordinary general meeting held on the 18th February, 1922. (Owing to the industrial disturbances and the revolution the ordinary general meeting for March, 1922, was abandoned.) Election of new members. Exhibition and Demonstration of Devices, etc., of Practical Advantage. General business. Papers for reading: (1) " Development of the Blast Furnace " (lecture), by J. Henderson; (2) " Underground Haulage at Modder East," by J. Chilton. Symposium: " Miners' Phthisis." Reply to discussion: " Distribution of Gold in Banket Ore Classified Products with reference to Milling and Cyanide Operations," by F. Wartenweiler. Final discussion: (1) " A Résumé of Standard Methods in Sampling, Analysis and Classification of Coal," by A. Trevor Williams; (2) " The Acidity of Mine Waters," by F. W. Watson and R. A. Cooper; (3) " Coal Pillar Extraction from Two Seams and Surface Effects," by W. T. Heslop; (4) " Waste Rock in Ore Milled," by Dr. W. A. Caldecott; (5) " Some Notes on the Pilgrims Rest Goldfields," by H. C. F. Bell. Discussion: (1) " The Correlation of Metallurgical Statistics," by H. A. White; (2) " The Combustion of South African Coals in Boiler Furnaces," by E. P. Reim; (3) " Features in the Treatment of a Refractory Gold Ore," by F. Wartenweiler; (4) " Notes on the Manipulation of Osmiridium Concentrate," by R. A. Cooper

Pictorial Inexactitudes.

The efforts of some of our London contemporaries to illustrate the recent trouble on the Rand have been responsible for some freakish attempts to turn old pictures to advantage. Perhaps the most futile of these attempts is to be found in *South Africa*, a publication which purports to print " up to the moment " news about this unfortunate country. To illustrate " the Strike on the Rand " this publication reproduces a fifteen-year-old railway map of the Transvaal that is mainly remarkable for what it leaves out in the way of recent railway extension. Such an antiquated map is, of course, worse than useless; and illustrates neither the strike on the Rand nor the railway progress of the Transvaal. Another ancient picture is reproduced, showing the Brakpan Power Station as it looked fifteen years ago. These illustrations, we venture to suggest, are of merely historic interest; and should be more appropriately included under the feature of the paper entitled " Twenty-five Years Ago."

GARGOYLE

Lubricants

A grade for each type of service

Production's Sly Enemy

FRICTION

the unseen enemy of production in your plant.

IF FRICTION COULD SPEAK, it would confess, "I am robbing you of power, of production, of profit."

If your machines were human, they would tell you that friction is pain—and pain is the forerunner of trouble.

What will guard you against wasteful friction? Correct lubrication—and that only. The subject is well worth your most serious thought.

We are in a position to reduce the wear and tear on your machinery—to reduce power waste and so increase your useable power.

This increased power means increased production without added power cost. It means improved profit. It will protect your pocket-book from friction theft.

We can bring to bear on your plant the most complete fund of lubricating experience in existence. It embraces thorough engineering knowledge and wide practical experience.

We suggest you get in touch with our nearest branch

VACUUM OIL COMPANY OF S.A. LIMITED

Cape Town
Mossel Bay
Johannesburg
Port Elizabeth
Pretoria
East London
Kimberley
Durban
Bloemfontein
Lourenco Marqes.

ROBINS
CONVEYING BELT COMPANY
NEW YORK
Engineers, Founders, Machinists

Design, Manufacture, and Erection of

BELT CONVEYORS
BUCKET ELEVATORS
COAL, COKE, AND ORE SCREENS
COAL AND COKE CRUSHERS
SKIP HOISTS
COAL AND ORE BRIDGE CRANES
ORE-BEDDING SYSTEMS
SHIP LOADING AND UNLOADING TOWERS
COAL AND ASH HANDLING EQUIPMENT FOR POWER PLANTS
COAL HANDLING AND SCREENING EQUIPMENT FOR COLLIERIES
AND MANY OTHER TYPES OF MATERIAL-HANDLING EQUIPMENT.

Branch for South Africa:
Robins Conveyors (S.A.), Ltd.,
P.O. Box 4736, 'Phone 4182, JOHANNESBURG.

USE
"PORPOISE"
BRAND
ANTIFRICTION GREASE

Used for years by the majority of Mines all over South Africa.

Manufactured by

South African Lubricants & Chemical Works, Ltd.,
DURBAN & JOHANNESBURG.
Phone 1618, *Johannesburg Branch Office.*

Knight Central's Life.

"A MATTER OF MONTHS."

The latest annual report of the Knight Central, Ltd., may be its last. Compared with the operations of the preceding year, the tonnage milled shows an improvement of 31,400 tons, and is the highest yet recorded during the history of the company, whilst working costs show a gratifying decrease of 3s. 7d. per ton milled. The yield, however, records a further decline of ·96 dwt. per ton milled, which, combined with the lower price received for gold, equals a reduction in recovery revenue of 6s. 4d. per ton milled. The working profit earned accordingly shows a decrease of 2s. 9d. per ton milled. This working profit is wholly due to the price of gold having ruled above standard during the year; at the standard rate operations would have resulted in a loss of 3s. 3d. per ton milled. The block of Main Reef ore, east of the East Shaft, which since 1917 has been the mainstay of your mine, has been practically exhausted during the year. The remaining ore reserve, estimated as at December 31, 1921, at 147,800 tons, shows a decrease of 2,900 tons and a fall in value of ·5 dwt. per ton compared with the preceding year. As shareholders are aware, it is impossible to appreciably augment the ore reserve, and owing to its low value and the continued fall in the price of gold, it may not be profitable to extract more than a portion of this tonnage. It is therefore anticipated that operations will not continue much longer, and a meeting of shareholders will be convened to consider the liquidation of the company as soon as the directors are satisfied that profits can no longer be earned.

Mr. H. T. Brett, the consulting engineer, in the course of his annual report, writes:—The following is a summary of the principal features of the work of the past three years. Tonnage milled, 1919 252,100, 1920 295,000, 1921 326.400; working costs per ton, 1919 28s. 7d., 1920, 27s. 3d., 1921 23s. 8d.; revenue per ton with gold at 84s. per oz., 1919 27s., 1920, 24s. 6d., 1921 20s. 5d.; working profit per ton with gold at 84s. per oz., 1919 loss 1s. 7d., 1920 loss 2s. 9d., 1921 loss 3s. 3d.; working profit with gold at 84s. per oz., 1919 loss £19,612, 1920 loss £40,813, 1921 loss £53,023; aiddtional revenue represented by difference between 84s. per oz. and actual price realised, 1919 £36,752, 1920 £109,413, 1921 £83,659; total working profit, 1919 £17,140, 1920 £68,600, 1921 £30,636; development footage, 1919 2,336, 1920 2,050, 1921 1,004; ore in reserve—tons, 1919 200,300, 1920 150,700, 1921 147,800; average value of ore reserve—dwt. per ton, 1919 6·8, 1920 6·1, 1921 5·6; average strength of coloured labour force, 1919 2,068, 1920 2,222, 1921 2,202. The year opened very inauspiciously and losses were incurred on the first three months' work. Thereafter matters began to improve with a steady increase in the tonnage milled and reduction in operating costs, the final result being that the tonnage treated during the year constituted a record for the company, while working costs were reduced by no less than 3s. 7d. per ton. This result reflects great credit upon the management, and it has only been achieved by paying the most careful attention to every detail. The yield per ton declined by nearly 1 dwt. owing to the exhaustion of most of the rich Main Reef area (east of No. 3 Shaft) which has been the mainstay of the mine during the last three years; the improvement in tonnage and working costs, however, enabled the company to show a profit of £30,636, as the result of an expenditure of £386,589 during the year. The small amount of development work carried out was confined in the main to the exploitation of areas which were expected to be payable, and nothing of importance was discovered by such work. About 12,000 tons of ore were obtained from the claims acquired from the Knights Deep, Ltd. (in liquidation). The following small tonnage of ore, which it was considered could be mined at a slight profit in the absence of any further serious decline in the price of gold, remained in the mine at the end of the year:—Main Reef, 64,470 tons at 5·8 dwts. per ton; South Reef, 83,330 tons at 5·5 dwts. per ton; total, 147,800 tons at 5·6 dwts. per ton. The position as far as it can be seen is that the life of the mine will only be a matter of months. A large area remains undeveloped, but practically all exploratory work has ben abandoned owing to the unpromising prospects, as explained by the consulting engnieer in his report of the previous year. The grade of ore left in the mine is so low that it could not be worked at a profit with gold at its normal price, while any selective mining is out of the question in view of the very limited number of points of attack available.

Union Finances.

The Union financial returns for the year ended March 31 are now available. Though they show a big deficit, it is not so large as that anticipated by Mr. Burton in his recent speech on the subject. The position as revealed by the returns is as follows: Revenue, £28,933,156; expenditure, £30,325,276; deficit, £1,392,120. To this deficit must be added the 1920-21 deficit of £255,000, and from the resulting sum must be taken the 1919-20 surplus of £460,000, which was restored to revenue from the loan account. There is thus a net accumulated deficit of £1,187,120; and even this figure may be slightly reduced when the final adjustment has been made, as there is always a certain amount of revenue in transit to the Treasury at the end of a month. This decrease in the deficit is all the more remarkable because the expenditure for the year has exceeded the original estimates by £181,447 more than the additional £600,000 which Mr. Burton in February told Parliament would be required. The decrease, then, is due entirely to the very large amount of revenue that has flowed into the coffers of the Treasury during the past two months. The average revenue collected in a month is a trifle over £2,000,000. In March, revenue to the tune of £2,848,541 was collected, while the revenue for February rose to the sum of £3,544,919. As a result the revenue for the financial year falls short of the estimates as they were originally framed by only £216,844.

Cheap Roof Tiles.

Interesting investigations have recently been carried out at the Imperial Institute, London, England, into the use of African clays for the manufacture of roof tiles. The object of these investigations was to discover a roofing material which would be cheaper and cooler for use in tropical countries than the familiar corrugated iron. Many specimens of sand and clay were examined and it was ascertained that certain mixtures would produce satisfactory tiles. In one case a special infusorial earth containing a small proportion of clay produced roof tiles very much lighter than the ordinary type. There are ample deposits of this infusorial earth in various parts of the British Empire.

Kolmanskop Diamonds.

POINTS FROM THE MANAGER'S REPORT.

The accounts of the Kolmanskop Diamond Mines, Ltd., for the period ended December 31 appear in the advertisement columns of this Journal. Reference may here be made to the report of the general manager for the period in question. This states that during the year under review the output from the Charlottental area was maintained at approximately the figure of the previous year, whilst from the Southern area the output on account of operations there having been temporarily suspended remained comparatively low. The output amounted to: From Charlottental area, 50,989 carats; from Southern fields, 1,247 carats; total, 52,236 carats. At the beginning of the year the hitherto customary advances towards working costs granted by Government were limited to a considerably reduced production and were finally discontinued as from 1st April, 1921. As a consequence mining operations in general had to be greatly curtailed and the costly work on the Southern fields had to be temporarily suspended. Again towards the middle of the year the output had to be considerably increased as, on account of the rapidly dwindling price of diamonds, the fulfilling of the sales quota demanded a correspondingly enhanced rate of production. Unfortunately at this juncture unusually heavy winter rains set in, the effect of which made itself felt well into the summer months. In October a fresh outbreak of influenza was experienced, which seriously affected production work well into December.

Mining Area.

Charlottental Area.—The principle of going over ground previously worked with a view to finally exhausting the deposits was adhered to as far as possible, and maiden ground was only very gradually broached. The area fully worked out to end of 1920 was 786 hectares; to which were added in 1921, 125 hectares; total, 911 hectares.

Southern Fields.—Circumstances mentioned above gave cause to discontinue mining work at field Pusztatal as from February 1st, and at field Glueckauf as from March 15th. Production work on Grillental fields was continued up to 30th June. From that date to the end of the year necessary examination work was carried out, which covered Grillental fields 3 and 5. The total area of the Southern fields worked out during the year under review is 17 hectares.

The supply of Ovambo labour at the beginning of the year was satisfactory, but proved inadequate during the second six months. At the close of the year, however, the supply again grew plentiful. The work performed by the Ovambo, it may be said, showed an improvement over that of the previous year. By the fresh outbreak of influenza in October nineteen whites and 389 natives were affected.

Working Methods and Output.

(1) Charlottental Area.—Washing tests periodically repeated have proved that the " differential sieves " employed throughout the whole plant continue to work in an exemplary fashion. In April an electro-magnetic separator, of the " Humboldt " system, was installed; by this plant the old concentrates, collected in years past and previously " picked " several times by hand, were exhaustively retreated. Since October the entire concentrates obtained at the various washing plants are no longer " picked " on the spot, but are transported to the separator, where they are finally treated in one process. The actual production of the diamonds by this device is centralised to the greatest possible extent, and an exhaustive picking of the treated gravel warranted. About the middle of the year it was found necessary to move the dredger, as the site it occupied had been fully worked out. In its new position the dredger will find work for probably three and a half to four years. In consequence of rainfalls great difficulty was experienced in operating the dredger during the second half of the year. The following figures represent production work done during the year under review: 306,780 loads mined (estimated); 134,826 loads washed (measured), inclusive of old tailings and concentrates previously treated; thereof, 62,681 loads tailings and concentrates previously washed. The output for 1921 was 50,989 carats, that is 0·378 carat per load washed.

(2) Southern Area.—Here production work was, as usual, carried out by hand jigs (fitted with differential sieves). 33,500 loads mined (estimated); 7,972 loads washed, yielding an output of 1,247 carats, which is equal to 0·156 carat per load washed, and 7·58 diamonds to the carat. Working expenditure for all fields—not taking into account head office and selling expenses, 10 per cent. interest and depreciation, but inclusive of water boring and prospecting costs—amounts to per load washed, 12s. 9d.; per carat produced, 34s. 10d. Selling prices so far realised for the output for 1921, have been, for: Charlottental stones, 55s. 3½d. per carat down to 42s. 1¼d.; Southern Area stones, 102s. 3½d. per carat down to 55s. 11d.

Burning Brown Coal.

Valuable deposits of brown coal and lignite are found in various parts of the world, and a great deal of scientific attention is being given to the problem of utilising them to the best advantage. In no other country have the problems of economical fuel consumption been more successfully studied than in Great Britain; and it is only natural that British engineering firms should have recently devised special boilers and furnaces for the efficient burning of brown coal. A trial installation, in which the usual arrangements for burning ordinary coal were ingeniously modified, was set up recently in a British factory and exhaustively tested with very promising results. The object of the apparatus is to improve or raise the grade of the coal before it is actually fed on to the grate. The fuel passes through a special apparatus for a period of 45 minutes, during which it is exposed to hot gases which drive off the greater part of the moisture and the carbon dioxide. The result is a fuel of a much greater steam-producing value than the original coal.

Finance and Information for Investors.

AN EXAMINATION OF BALANCE SHEETS AND REPORTS—DATA FOR SHAREHOLDERS.

In these pages we shall endeavour to compress reviews and criticisms of balance sheets, to examine Government, Municipal and other loans, to note dividend declarations, to analyse new prospectuses, and to examine the financial results and prospects of mining, commercial and banking companies concerned with trade, industry and finance in the Union and Rhodesia.

The South African Currency Problem.

Sir Henry Strakosch covers a wide field in his latest pamphlet on the South African currency and exchange problem—already referred to in these pages. His final words, it may be noted, are: "The conclusion is irresistible that the determinations of the Select Committee of 1920 are as sound and wise to-day as they were last year, and, in particular, that 'it is not practicable to fix any definite time limit' for the resumption of specie payments." How he arrives at this conclusion is indicated in the following extracts from his report: In the light of what is said above, what is likely to be the position in South Africa when specie payments are resumed? The monetary change will react rapidly on the external value and sluggishly on the internal value of our monetary unit. The external value will be raised rapidly to what 123·274 grains of standard gold or 4·866 dollars will buy abroad, while the difficult process of reducing wages, the prices of stocks of commodities on hand, and the prices of new home-produced goods will cause the internal value of our money to rise very much more slowly. In these circumstances, the South African pound will buy fewer goods at Home than it will buy elsewhere, but, being convertible into 123·274 grains of gold, it will be so converted and shipped abroad to pay for goods bought there. To the extent to which South African pounds are sent abroad our specie reserves will be depleted, and they will continue to be so depleted until the internal purchasing power of our money has been raised to a parity with its external value.

* * *

A Difficult Problem.

But even if we succeeded with a huge effort of deflation in bringing the internal and external value of our money rapidly to a common level, and without in this process crippling our industries, our problem is by no means solved. Our specie reserves are subject to attack whenever the internal purchasing power of the money of other countries rises above the internal purchasing power of our money, and that obviously depends as much upon changes in other countries as upon changes that may take place with us. If one remembers how violent the fluctuations are in other countries, owing to the confused monetary changes which are constantly taking place, one must surely have the gravest doubt of South Africa's ability to follow these changes so closely and so rapidly as to keep the internal purchasing power of her money at all times in close adjustment with the internal purchasing power of the moneys of other countries. It will readily be appreciated how difficult and uncertain a process it is to achieve this if the deviation is anything more than a trifling one. But it is not only difficult and uncertain, it is also dangerous. In my paper on "The South African Currency and Exchange Problem," which formed the basis of my evidence before the Select Committee last year, attention was drawn to this and emphasis laid upon it: "The want of coincidence of these two factors may well have a most serious effect upon all manner of production in the Union."

The Gold Mines and the Problem.

The position of the gold mining industry is a particularly difficult one. When specie payments are resumed, the industry will be receiving for every 123·274 grains of standard gold it produces one South African pound, or, if shipped to America, 4·866 dollars. That amount of dollars notoriously buys very considerably less to-day than it did in 1913, so that the South African pound on reaching the purchasing power parity of the dollar would, in present world conditions, also buy considerably less than it did in 1913. It is common knowledge that a substantial number of the mines on the Rand cannot operate profitably unless they can acquire for every 123·274 grains of standard gold they produce an output of labour and a supply of materials which is not inferior to that of 1913, or, in other words, it must not cost more to treat a ton of ore than it did in 1913. That is illustrated by the subjoined figures. In order to restore the cost of production to the level at which it stood in 1913, it will be necessary for the average costs to be reduced by what they have risen since then, as follows:

White wages, from 5s. 11d. in 1913 to 9s. 2d. in 1920, 55 per cent.; native wages, from 4s. 2d. in 1913 to 4s. 11d. in 1920, 18 per cent.; stores, from 7s. 10d. in 1913 to 11s. 6d. in 1920, 47 per cent.; a total of 17s. 11d. in 1913 to 25s. 7d. in 1920, 43 per cent. The figures for 1921, which have become available since this report has been written, change the picture as follows: White wages, from 5s. 11d. in 1913 to 8s. 8d. in 1921, 46½ per cent.; native wages, from 4s. 2d. in 1913 to 4s. 10½d. in 1921, 17 per cent.; stores, from 7s. 10d. in 1913 to 11s. 10½d. in 1921, 51½ per cent.; a total of 17s. 11d. in 1913 to 25s. 5d. in 1921, 42 per cent. If the drastic adjustment to the lower level is not achieved within a very short time after the external value of the South African pound has reached parity with the dollar—that is, upon or before specie payments are resumed—a substantial proportion of the gold mining industry, not being able to produce profitably, will have to cease operations. The physical condition of many of the mines likely to be affected is such that, when operations have once ceased, it will be impossible to resume them later on. It is clear then that, so far as the gold mining industry is concerned, it would not be enough, on resuming specie payments, for the internal value of our money to reach its external value, but it would have to rise rather considerably above it if the poorer mines on the Rand are to be kept alive. Enough has been said to show how powerful, complex and for us uncontrollable the forces are which dominate the problem, and how entirely inadequate the doctrine previously referred to is to guide us through the difficulties and complexities of the present situation. To rely upon it, and, on the strength of it, to resume specie payments in South Africa at a definite and early date would be disastrous.

* * *

The Sheba.

A further circular has been issued by the secretary and liquidator of the Sheba Gold Mining Company announcing that the first allotment of over 600,000 shares in the new company has already been made, and giving notice finally closing the list. He points out that, whereas in his last circular of 30th January the ore reserves were given as approximately 60,000 tons, the latest report from the mine now states definitely that the most recent prospecting and development work shows that the reserves have been increased to 84,785 tons of payable ore. The circular also observes that the company's property being situated 300 miles from Johannesburg has not been in any way affected by the strike.

The Week in the Sharemarket.

LONDON STILL BUYING—TEMPORARY SETBACK ON PROFIT-TAKING.

Buying from London has continued during the week; this is undoubtedly improving the local financial position and will doubtless largely assist in overcoming the many difficulties in business circles caused by the Revolution. With the lead from London local investors are beginning to again consider the advisability of coming into the market, although at the moment this is apparent to only a small extent. London advices continue to indicate that the inclination to deal in Kafirs is gaining strength, and in spite of the fact that occasional profit-taking setbacks may be encountered from time to time, we cannot help thinking that from many favourable pointers we are justified in anticipating a material general improvement in our market. We gather from various remarks and comments made in Home market circles that the public overseas have become so accustomed to strikes and political disturbances that these features have little effect when once they have decided to "back their fancy" unless it is a feature of an exceptional nature.

On Thursday morning Main Reefs were the feature at the opening on London orders, and were bought at 10s. 7½d. Modder Deeps were dealt in at 42s. 6d., Springs at 39s., Sub Nigels at 11s. 9d., State Mines at 82s., and African Oils at 1s. 6d. An odd lot of Modder B. was bought at 29s. 9d. On the call the general market was easier, including diamonds, but business was not very brisk and transactions were usually on a small scale. Declines were not serious, but were pretty general and averaged only from 3d. to 6d. per share in most of the gold stocks. Main Reefs were an exception and were slightly higher at 10s. 7½d. sales and buyers. Sub Nigels were also harder at 11s. 9d. sales.

Consolidated Diamonds were easier at 14s. 3d. bid, also West Ends at 21s. 6d. sellers, and Crowns at 6s. 3d. sales and sellers; but Roberts Victor and Frank Smiths were unchanged. Pretoria Cements were unchanged at 41s. 6d. sales and buyers, Alkali inactive, and Transvaal Silvers harder at 18s. bid. Tweefontein Collieries were bought at 16s. 6d. Nothing was done in tins.

Reserve Banks further improved and were about 30s. higher at £112 sales, while Union Tax Free 4½ per cent. Loan and the Taxable 5 per cent. Loan had both considerably higher buying bids without business. The German-Soviet treaty has probably tended to slightly depress business.

	Thurs., 13th.	Tues., 18th.	Wed., 19th.	Thurs., 20th.
Anglo-American Corporations	21 6	21 7	21 9	21 0
Apex Mines	6 10†	6 10†	6 6*	6 6*
Bantjes Consolidateds	6 4*	6 6*	6 6*	6 4*
Brakpan Mines	17 0*	17 0*	17 0*	15 0*
Brick and Potteries	—	6 6*		
British South Africa			12 0*	
Bushveld Tins	0 7†	0 7†	0 7†	0 6†
Cinderella Consolidateds	2 4*	2 3*		2 3*
City and Suburbans	2 2*	2 2*		2 3*
City Deeps	42 9*	43 6	43 9	43 0*
Clydesdale Collieries	20 0*			20 6*
Consolidated Diamonds	14 6*	14 9*	14 6	14 3
Consolidated Investments	23 0*	23 0*	23 6*	24 0*
Consolidated Langlaagtes	—	12 6*	12 6*	13 6*
Consolidated Main Reefs	10 3*	10 6	10 3*	10 7½
Consolidated Mines Selections	12 9*	12 6*	—	—
Coronation Collieries		36 0*	31 3*	—
Coronation Freeholds	0 8*	—	0 9*	1 0*
Cornerstone Syndicates	5 0	5 0	5 0	4 9*
Crown Diamonds	6 0*	6 0*	6 6	6 3
Crown Mines	36 0*	36 6*	36 0*	38 0*
Daggafontein Mines	2 9†	2 9	2 9†	2 10
East Rand Coals	1 6*	1 6		
East Rand Deeps	0 10*	0 10	0 10*	0 10*
East Rand Minings	—	0 6*	—	0 6*
East Rand Proprietaries	6 6*	6 6*	6 9*	6 6*
East Rand Debentures	£85†	£85†	£85†	—
Eastern Golds	0 6*			
Ferreira Deeps	—	7 3*	7 0*	7 0*
Frank Smith Diamonds	3 9	3 8*	3 9	3 9
Geduld Proprietaries	54 3	55 3*	55 3	54 9
Geldenhuis Deeps	—	—	6 3*	6 3*
Glynn's Lydenburgs	11 6*	13 0	13 0*	13 0†
Government Areas	81 6*	82 0	82 3	81 9
Hume Pipes		12 0*		12 6*
Johannesburg Board of Executors	32 6*	33 0	34 0*	—
Knight Centrals	4 5*	—	4 3*	4 3*
Knight Deeps		1 5*		
Lace Proprietaries	7 9	7 9*	7 10*	7 9*
Leeuwpoort Tins	6 9*	7 0	6 9*	6 9*
Luipaardsvlei Estates				2 0*
Lydenburg Farms	1 8*	1 9	1 9*	
Middelvlei Estates	—	1 6*	1 6*	1 6*
Modder Wests	1 6†	—	—	—
Modder B's	28 6*	29 0	29 6*	29 3*
Modder Deeps	42 3	42 6	42 6*	42 1½
Modder Easts	8 6	8 6	8 7*	8 9
National Banks	—	220 0†	220 0†	—
Natal Navigation Collieries	31 0*	31 0	31 3*	31 0*
New Eland Diamonds		22 6*		
New Era Consolidateds	6 0*	6 3†	6 0*	6 0*
New Geduld Deeps	1 4*	1 4*	1 4*	1 6*
New Kleinfonteins	6 6	6 3*	6 4*	6 0*
New Modderfonteins	71 3*	72 6	73 6	73 3
New Primrose	—	5 6*	5 3*	5 6*
New Unifieds	—	4 9*	—	4 6*
New State Areas	28 6	29 0	29 9	29 0
Nigels	6 0*	6 0*	6 0*	6 0*
Nourse Mines	11 6	11 9	11 6*	11 6*
Pretoria Cements	41 0*	41 0*	41 6	41 6
Princess Estates	1 0*		1 1*	1 1*
Rand Collieries	1 0*	—	0 9*	—
Rand Nucleus		1 0*	1 1*	
Randfontein Centrals	11 0†	11 0	10 6*	10 6*
Randfontein Estates	16 4½	16 9	16 6	16 0*
Rouxville Diamonds			—	1 0*
Roberts Victors	8 6*	9 0*	8 9*	9 0
Rooibergs		3 0*	3 6*	3 9†
Rose Deeps		12 6		—
Simmer and Jacks	3 9	—	3 7	—
South African Lands	4 4*	4 4*	4 1*	4 4*
Springs Mines	38 6	39 9	39 3*	39 0
Sub Nigels	11 6	11 6	11 6	11 9
South African Alkali	12 9*		12 3	12 3*
South African Townships	8 3*	8 3*	8 3*	8 3*
Transvaal Lands	17 0*	17 0*	17 0*	17 0*
Transvaal G.M. Estates	8 3*	8 0*	8 9†	—
Transvaal Silvers	17 0	17 0*	17 9	18 0*
Tudors		0 9†	0 9†	
Van Dyks		1 6*	1 3*	1 6
Van Ryn Deeps	62 9	63 6	63 3	62 3*
Village Deeps	9 3†	9 3	9 6*	9 3*
West Springs	9 6	9 9	10 0	9 9
West Rand Consolidateds	—	—	2 6*	—
Western Rand Estates	4 0†	4 0*	3 10*	4 0*
Witbank Collieries			38 6*	38 0
Witwatersrand Deeps		10 6*	11 0	10 6*
Witwatersrands	—	11 0*	11 0*	11 0*
Zaaiplaats Tins	2 9†	2 3*	2 0*	2 6*
Union 5 per cents.	£102½†	£102¼*	£102½*	£102½*

* Buyers. † Sellers. a. Odd lots. b. Ex London.

CARBIDE

——ALL SIZES——
IN 1, 5, 10, 50 lb. TINS
and 100 lb. DRUMS

Apply: MANAGER,
RAND CARBIDE, LTD.,
SOUTH GERMISTON.
'Phone 252 Germiston.

ENGINEERING SECTION.

The Blackman Keith Centrifugal Fan.

RELIABILITY AND EFFICIENCY.

While practically every industry has many uses for fans, it may be truly said that no single type of fan is suitable for universal use.

One of the most vital and important uses to which centrifugal fans are supplied is that of the ventilation of mines.

High efficiency and low running costs are essential, but it is of paramount importance that the mechanical strength and reliability of the fan be assured, as on this may depend hundreds of human lives.

In all these respects the Blackman Keith fan leaves nothing to be desired.

The work done by any centrifugal fan consists in the driving of the air away from the outer edges of the blades, and so producing a lowering of pressure in the interior of the fan wheel, which lower pressure being lower than that of the atmosphere, induces fresh air to enter and take the place of that discharged centrifugally. Since the inlet and the outlet are at right angles to one another, the air is deviated in its course through the fan wheel at right angles, *i.e.*, it is discharged in a direction at right angles to that at which it entered.

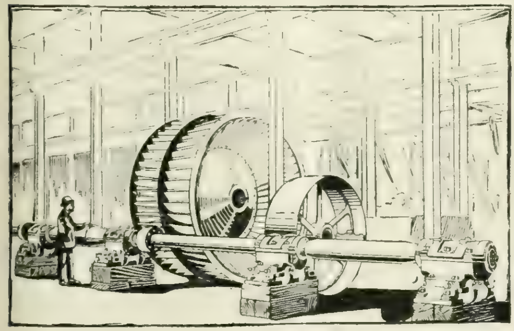


Fig. 1.

Double Inlet Blackman Keith Mine Fan Wheel, 140 inches diameter complete with pulley, shaft and bearings, for dealing with 400,000 cubic feet of air per minute against 6 inches water gauge.

Now it is axiomatic that the best fan must be the one which is so constructed as to receive the air without shock and pass it to the discharge outlet without its having been subjected to retardation of any kind or to undue acceleration, also avoiding all sharp deviations, shocks, rebounds or unequal distribution of the air round the fan wheel or in the casing.

The usual drum type of fan is fairly efficient, but it has one great fault to high efficiency, viz., uneven distribution of effect, whilst at the same time the very narrow blades are almost useless for pressure or suction above two or three inches water gauge.

It is clear that an efficient and even discharge from the drum depends very much upon the proper direction of the inflowing air, a large part of which, unless some means are taken to prevent it, will, after entering the eye of the fan, continue to travel straight forward until it strikes the back of the drum with considerable force, then rebounds against the entering air, and finally passes in a confused state through that part of the drum nearest the back, leaving the front part idly churning the air and so wasting power and losing volume.

Keeping these thoughts in mind, it is interesting to consider how many details that makes for efficiency is accurately embodied in the Blackman Keith fan, the characteristic features of which will be seen from the illustration (Fig. 1) of a large double inlet Blackman Keith wheel, 140 inches diameter, complete with pulley, shaft and bearings, recently supplied to deal with 400,000 cubic feet of air per minute against a static resistance of six inches water gauge.

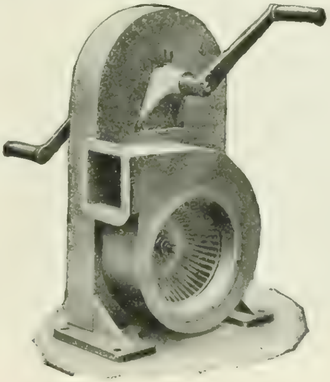


Fig. 2

Blackman Keith Hand Driven Fan, capable of dealing with 550 cubic feet of air per minute at $1\frac{3}{4}$ in. water gauge, the handles being turned at 50 revolutions per minute.

Fig. 2 represents a hand-driven Blackman Keith fan capable of moving 550 cubic feet of air per minute at $1\frac{3}{4}$ in. T.W.G. when handles are turned at 50 revolutions per minute.

It will at once be seen that the fan wheel is somewhat larger in diameter at the front than at the back, and that this is the case both inside and outside; it will be noted also that the blades are bent, so that the inner edges advance to meet the air in a direction almost tangential to the path of rotation, whilst the curve of each blade is such that the air slips across it without shock and with the least possible friction.

The effect of the enlargement of the outer diameter of the wheel at the inlet will be apparent when it is borne in mind that the inductive power depends mainly upon the tip velocity of the blades, and therefore the induction will be greatest near the inlet where the peripheral velocity is greater, and least at the back, so that the natural tendency for the air to flow to the back is exactly counterbalanced by the increased induction towards the front.

Hence there is no overcrowding of the air at the back of the drum, but the whole area does equal work, with the result that much more air is handled than a parallel drum can deal with, whilst power is saved, because no portion of the air is raised to a higher velocity than the other portion, as is the case where the distribution of effect is unequal.

Thus a comparison between all other types and the Blackman Keith fan shows that in the first mentioned the air leaves the blades at varying velocities and pressures at the back of the drum only, while the front ends of the blades are not only useless but detrimental, the Blackman Keith, however, delivers all the air at a uniform speed and pressure over the whole of the drum surface.

In the first mentioned case, in which the particles of air are moving at various velocities, it is obvious that the resultant pressure must be only that due to the mean of those velocities, and it therefore follows that part of the air must needs be raised to a higher velocity than would otherwise be necessary for the pressure obtained, and hence much power is lost by such fans because the power absorbed in moving air increases as the third power of the velocity, which means that double the velocity takes eight times the power.

A great feature of the Blackman Keith fan wheel is that whilst it is the strongest and most rigid of all fans, yet it requires no stays, because the blades in themselves are strong angle gussets; and these, being electrically-rivet-welded at both ends, form an absolutely rigid member, which cannot get out of truth nor vibrate at any practicable speed.

Blackman Keith fans may be fitted with pulley for belt or rope drive. They are also supplied combined with electric motors or coupled direct with steam, gas or oil engines. In some cases complete electric fans are provided with auxiliary hand drive as a safeguard, should the electric current fail, while the smaller fans may be arranged for hand drive only.

The high efficiency of the Blackman Keith centrifugal fans, which is maintained over an unusually wide range, gives this fan a very wide field of usefulness, but apart from its efficiency as an air mover, the design of the runner is of considerable interest to engineers from a mechanical standpoint, hence this particularly detailed description.

The Blackman fans are supplied by the well-known fan experts, the Blackman Export Co., Ltd., of 374 Euston Road, London, N.W.1. The company is represented in South Africa by Messrs. Saaler & Franks, Ltd., Fox and Loveday Streets, Johannesburg, South Africa.

Rand Water Board Contracts.

The Rand Water Board are inviting tenders for the supply, delivery, and erection (where specified) of one overhead crane, workshop tools, and equipment for the Board's Vereeniging, and other pumping stations. The items for which tenders are required are as follows:—1 hand operated overhead travelling and traversing crane capable of lifting safely two short tons, or alternatively of an approved system of telepherage; 1 12 in. or 12½ in. centre lathe admitting 9 ft. 6 in. between centres with all accessories complete; 1 6½ in. or 7 in. centre lathe admitting at least 3 ft. 6 in. between centres with extra chuck; 1 4 ft. radial drilling machine with all accessories; 1 sensitive pillar drill with accessories complete; 1 shaping machine equipped with tilting table top, two vices, etc.; 1 bolt screwing machine for Whitworth threads, ½ in. to 2 in. diam. complete with dies; 1 tube screwing machine for British standard gas threads and to screw tubes 2 in. to 6 in. inside diam., complete with dies; 1 Smith's hearth, 4 ft. x 3 ft. x 2 ft., complete with hood; 1 woodworking band saw with 30 in. saw pulleys; 1 machine tool and general grinder with two abrasive wheels, etc.; 1 centrifugal waste cleaning machine. Various hand tools are required, such as hand operated punching and shearing machine, hack sawing machines, two grindstones, six 6 in. vices, six 4 in. vices, two 3 in. vices, twist drills, pipe vices, etc. Tenders are also invited for two portable electric grinders, and four portable electric drills. In addition to the foregoing the following additional machine tools and tools are also required: Two lathes, 12½ and 7½, one radial drilling machine 4 ft., one sensitive pillar drill, one shaping machine, one bolt and pipe screwing machine, one machine tool and general grinder, one hand punching and shearing machine, one hack sawing machine (hand) with two portable forges, etc., one workship portable hand operated crane winch, safe weight of lift 3,000 lb. mounted on suitable wheels. All the power driven plant supplied is to be equipped with individual electric motor drives. The electricity available for driving the machine tools, etc., will be 3 phase current at 500/550 volts and a normal periodicity of 50 cycles per second. Tenders close on May 5.

British Industrial Advances.

At a recent trade exhibition in Great Britain there were several proofs that British production is successfuly extending into fields where other countries once claimed something like a monopoly. There was a wonderful exhibit, for example, of chemicals and dyes in addition to an excellent range of chemicals for medicinal and research purposes. Many of these products are the results of co-operation on the part of British chemical manufacturers. Evidence was also given that British firms are able to supply the film industry with everything required for the making of pictures, including the most up-to-date projectors and the largest commercial and projector lenses. One exhibitor in fact showed what was claimed to be the largest commercial lense yet produced.

British Electrical Research.

While an increasing amount of electrical research work continues to be done by individual electrical engineering firms in Great Britain, co-operative research is being developed on an ambitious scale. The Research Association formed by the British Electrical and Allied Manufacturers is expending £8,000 a year for five years on this type of research, which is aimed at the benefit of all concerned in the electrical industry. This financial arrangement was made at a time of acute depression in the world's trade and it will probably be greatly bettered when conditions improve. While this sum in itself may not appear large, British research workers have the faculty of getting very valuable results from a very moderate expenditure. The Royal Institution of Great Britain, in which Humphrey Davy, Faraday, Dewar, and other famous scientists made their valuable discoveries, did not expend much more than £100,000 on research over a period of 100 years. Practically every leading section of industry in Great Britain has its organised co-operative research association. In the case of brass, copper, and other metals not containing iron a great deal of very interesting research is now being carried on. The casting of brass, the influence of impurities on the working of copper, the electric melting of non-ferreous metals, and the grinding, jointing, and polishing of such metals are being closely studied. Perhaps the most important part of this research lies in the investigation of corrosion. The production of rustless iron and steel has stimulated the brass and other industries to give attention to the causes of corrosion. It is stated that the examination of tarnishing, which is the first stage towards corrosion, has already yielded very interesting results.

The Rand Water Board and the General Strike.

CESSATION OF WORK AT THE BARRAGE—THE QUESTION OF COAL—COMMUNICATIONS CUT—UNINTERRUPTED WATER SUPPLY SUCCESSFULLY MAINTAINED.

How the essential service of water supply to the Rand was uninterruptedly maintained is told in the following, taken from the official report of the Rand Water Board, submitted at its last meeting:

At the Vaal River Barrage Works the fact of the mechanics and other skilled tradesmen employed at those works having been called out on strike during the month of January last, in sympathy with the policy adopted by the industrial workers on the Rand and at Vereeniging, entailed the almost complete cessation of work at the Barrage from the middle of January until the strike was declared "off" on the 18th March. Besides seriously delaying the completion of the Vaal River Barrage, this strike action on the part of the employees concerned has involved the Board in the loss of approximately £4,000.

Chief Engineer's Report.

The Chief Engineer has furnished detailed information regarding the extent to which the Board's active water supply operations were affected during the period covered by the recent strike, which culminated in a serious revolutionary outbreak, and the measures taken by him to ensure, as far as possible in the circumstances, that the water supply to the Board's consumers would not be interrupted. In his report in this matter, the Chief Engineer states that, in anticipation of a strike on the coal mines, arrangements were made towards the latter part of December last to increase the stock of coal at the various pumping stations of the Board. That the arrangements made in this regard were successful is evident from the fact that the stock of coal on hand at all times throughout the strike period was sufficient to have kept the plant running for a period of nearly one month.

Supply Maintained.

As regards the water supply to the Board's consumers, it is interesting to note that the supply was maintained uninterruptedly during the period under review at an average rate of 11 million gallons a day. The fact has to be recognised that the Board's plant and mains were not interfered with, even during the crisis which succeeded the declaration of the general strike. The position, however, was pregnant with possibilities, and, under the conditions which prevailed, serious difficulties were experienced from time to time, but each situation, as it arose, was met and overcome by the measures taken by the Board's engineering staff and by the satisfactory manner in which the employees at the various pumping stations continued to carry out their duties. In this connection, it may be mentioned that for a period of from five to seven days following the proclamation of martial law on the 10th ultimo, the Chief Engineer was unable to communicate with any of the Board's pumping stations, with the exception of that situated on the Village Main Reef Mine in Johannesburg. It is greatly to the credit of the superintendents and their respective staffs that, notwithstanding their isolated positions and their liability to attack by the revolutionaries, they kept the pumps working at their full capacity throughout this very critical period. With one exception, the district plumbers stationed at various points along the Board's distribution mains between Randfontein and Springs attended continuously to their duties as far as circumstances would reasonably permit. It is regrettable that, as the result of compulsion by a certain section of the strikers, the mechanics employed on the distribution staff stationed at the Central Works Depôt, Johannesburg, ceased work on the day following the declaration of the general strike. The duties performed by the workmen in question include the necessarily prompt repairing of leaks in the Board's pipe lines, and are therefore closely connected with the maintenance of an uninterrupted water supply to the Board's consumers. It should be mentioned that these employees appear to have fully recognised their responsibilities to the Board and to the public in this regard, and that they only ceased work with great reluctance after every effort had been made by them to gain permission from the strike authorities to attend to any pipe line breakdowns. As events proved, no serious leakages occurred during the period whilst the services of these workmen were not available, but the position thus created was one of great anxiety to the Chief Engineer and the officials on the distribution staff, who lost no opportunity, even at considerable risk to themselves, of carrying out observations and gaining information regarding the conditions obtaining at the pumping stations and along the Board's distribution mains on the Rand. In view of the highly essential nature of the Board's undertaking, and the admittedly serious effect which an interruption of the water supply, even for a few days, would have upon the health of the communities served by the Board, there can be no question but that, as a body, the officials and the employees on the Board's engineering staff at its head office and at the out-stations rendered invaluable services to the whole of the Rand communities, by maintaining an adequate water supply during the period of the recent revolutionary outbreak. "We feel," declares the Board, "that the occasion demands that some record should be made of the praise due to the officials and employees concerned, in order that they may know that their services have been fully recognised and appreciated by the Board."

Colonel Carlos A. De La Carneiro, Director of Port and Railways, Lourenco Marques, who has just returned from Europe.

RHODESIAN SECTION.

Rhodesian Railway Finances and Engineering.

POINTS FROM LATEST REPORTS OF THE GENERAL MANAGER.

The General Manager of the Beira and Mashonaland and Rhodesia Railways, in his "Bulletin, No. 3," gives the approximate figures of earnings and expenditure for the first three months of the current financial year compared with the same months of last year. These figures refer to all sections, including the Vryburg-Bulawayo line and the Rhodesia-Katanga Junction Railway, and show: Total earnings in South Africa, £738,000 (three months, 1920, £729,667, or £9,033 increase); total gross operating expenditure in South Africa (including provision for reserve for renewals of permanent way and rolling stock), £506,047 (£517,405) (decrease, £11,358); net operating revenue, £232,653 (£212,262, increase £20,391); proportion of fixed charges payable out of surplus earnings, i.e. debenture interest, interest on income debenture stock, interest on 6 per cent. notes, interest on loans, income and corporation tax and sundry payments, £259,000 (£254,000, increase £5,000); estimated deficit after meeting all charges in South Africa and London, £26,347 (£41,738) (decrease £15,391). The slight increase in earnings is due to the operation of the surcharges of 33⅓ per cent., and 16⅔ per cent. during the whole of the three months of the current year, whereas these surcharges only operated for one month, and the surcharges of 25 per cent. and 10 per cent. operated for the remaining two months of the corresponding period last year. Actually there has been a slight increase in the quantity of goods carried, and a decrease in the number of passengers. Of the £11,358 decreased expenditure this year, some £7,000 refers to the Vryburg-Bulawayo section, where a decrease in wages and alterations in hours of service have operated during the first three months of the year. The remaining £4,000 has been due to a slight reduction in staff and other economies which are being introduced on the sections north of Bulawayo. The figure of fixed charges is practically the same as last year.

Decreasing Traffic.

The latest advance figures in regard to receipts show a very considerable falling off from the first three months of the year, chiefly under the heads of general goods and minerals. The expenditure is also dropping, but so far not in the same proportion as the earnings. Particulars of the passenger traffic on these lines during the three months ended December 31, 1921, and 1920, show that whilst the number of passengers carried has decreased, revenue shows a slight increase due to the operation of higher native fares as from the 1st November. The total tonnage of coal and coke conveyed over the lines north of Bulawayo during the period under review shows a slight increase as under:—Three months ended 31-12-21, 101,057 tons; three months ended 31-12-20, 97,158 tons; increase, 3,899 tons. Signs are not wanting, however, that this traffic is falling off, and information from the colliery shows a substantial drop in the orders for both coal and coke.

A Scene on the Rhodesian Railways.

Mineral Outlook.

Chrome Ore.—There are promising indications of a revival of this industry, and the railways are at present considering possibilities for encouraging it, as the competition of Indian chrome in particular is very keen. Particulars of the tonnages conveyed to Beira for export overseas during the two periods in question are subjoined: Three months ended 31-12-21, 1,442 tons; three months ended 31-12-20, 10,921 tons; decrease, 9,479 tons.

Asbestos.—This commodity has also shares in the prevailing depression, and, unfortunately, gives no sign of any immediate improvement; the heavy falling off will be apparent from the following comparative figures relating to the total tonnage conveyed over these lines: Three months ended 31-12-21, 2,031 tons; three months ended 31-12-20, 5,122 tons; decrease, 3,091 tons.

Copper.—From the following particulars of the tonnage carried to Beira for export, it is gratifying to note that, despite the reduced market value, this copper traffic is being well maintained: Three months ended 31-12-21, 10,630 tons; three months ended 31-12-20, 5,455 tons, increase, 5,175 tons. With standard copper at £58 per ton, however, the above figures are apt to give a false appearance of prosperity. The continued production of copper in the Congo must be looked upon as very doubtful unless the market improves.

Lead.—All the lead carried over these railways emanates from the mine at Broken Hill, which is producing an increased tonnage, as will be seen from the comparative figures in respect of three months ended December 31, 1921, and 1920: Three months ended 31-12-21, 4,648 tons; three months ended 31-12-20, 3,902 tons, increase, 746 tons.

Engineering Questions.

If there is little present prospect of railway extension in Rhodesia, the existing system, with its world record of mileage to the number of inhabitants, goes on steadily improving in efficiency. This is shown by the General Manager's latest "Bulletin" (the financial and traffic figures of which we have already quoted). Colonel Birney suggests that it is the experience of all railway administrations that progress in the design and weight of rolling stock tends to outrun progress in the permanent way, road and bridges. The object of the permanent way engineer is, once the track is laid, to see it solidified, drained and kept in first-class running condition. He would not normally look to having to strengthen it materially until the question of general renewals of the rails or sleepers comes up. The locomotive superintendent has a different point of view. As the traffic on the line develops, more rolling stock has to be added, and with each successive addition he can take the opportunity of improving his designs and introducing more modern practice. It is to be expected that every modification will be in the direction of heavier and larger locomotives. There is thus a constant tendency to increase the weights and axle loads of rolling stock above the standard which the road was originally designed to carry. This, says the General Manager, is precisely the situation on these railways to-day. The original standard of our track, viz. 60 lb. rails, with 12 sleepers to a 33 ft. rail, is not really adequate to carry, without risk of permanent damage to the rails or sleepers, the latest classes of engines. It has therefore been decided to limit the use of eleventh class engines to the section between Globe and Phoenix and Kafue, and to take immediate steps to strengthen the whole of this section. The original idea was gradually to replace the 60 lb. rails with 80 lb. rails, and 30 miles of track have been laid accordingly. But two factors then came in to upset the scheme. First, the great rise in the cost of steel, and, secondly, the urgency of getting the strengthening carried out owing to the commissioning of more eleventh class engines. It was, therefore, decided to strengthen the road by adding two additional sleepers per rail length and not by increasing the weight of rail. This programme of strengthening is now in full swing. On present figures the steel sleepers are more economical. The strengthening of the whole line from Globe and Phoenix to Kafue will cost nearly £400,000, and represents one of the heaviest items of capital expenditure. The work will, it is estimated, be completed before the end of the next financial year (1922-23).

Engine Runs and New Depôts.

When a railway is first constructed in a new and undeveloped country, it is difficult to foresee the best arrangements for working traffic, and the tendency always is to have long engine runs. In Rhodesia of recent years the situation has become more defined, and it is possible to work out a scheme with a view to reducing long engine runs so as to approximate more to an eight-hour shift for train crews. There may be efficiency in an eight-hour day for a man, but waste of money if an engine does only eight hours [illegible] £20,000, which represents nearly £6 a day for interest only, and it is therefore important to get the best possible value out of our engines. The pooling of engines is strongly objected to by every locomotive man, and there are obvious disadvantages to the arrangement. It has, however, been generally recognised that some kind of limited pooling may have to be resorted to, especially when traffic is busy, and that the double crewing of engines may often be forced upon locomotive officers as a result of the financial necessities of modern conditions.

* * *

A well attended meeting of the Small Workers' and Tributors' Association was held at Gatooma early in the month, Mr. J. Mack presiding. In opening the meeting the chairman thanked the members for the attitude adopted with regard to the Union Delegation. The secretary made a statement on the matter of the Native Labour Bureau refund, in which it was laid down that the amount to be distributed would be only that received, namely, £2,529. The Association's delegate to the Railway Conference on April 27, Mr. R. H. Ullyett, was invited to receive any members' views that it was thought advisable to bring up, and following a discussion on railway rates it was resolved to add the subject—supplementary to a resolution already formulated—to the Eiffel Flats railway resolution. Mr. Ullyett, with Mr. Mack in support, spoke in eulogistic terms of the new geological map recently issued and of its utility to mining men. It was resolved that the matter of the Gatooma-Enkeldoorn road be left to the discretion of the Roads Board. The chairman drew attention to the present condition of the Museum lodged in the Library Building. Valuable specimens were on view in cases protected solely by wire netting, with the result that the specimens were in anything but a presentable state for visitors to inspect. He advocated the substituting by the Association of glass for the netting, of which the cost would be trifling. The feeling of the meeting was in agreement, and it was resolved to leave the matter at the discretion of the president, pending word from the Government with regard to a subsidy. The mention of specimens brought forth some very interesting and somewhat trenchant remarks from Mr. Ullyett, in which he referred to the enormous traffic that was undoubtedly going on by means of theft from small property owners and consequent illicit gold buying. Reference was made by the speaker to the restricted powers of the Criminal Investigation Department, which he contended did not receive adequate support from the Government. So far-reaching is this subject that it is hoped to deal with it at greater length shortly. Messrs. Barrett, Blyth, Moore and Long were elected new members. The next meeting was set down for May 13.

SUCCESSFUL
FINANCIAL PUBLICITY!
CONSULT
THE TECHNICAL PUBLICITY AGENCY.
Advertising Advisers, Contractors and Consultants.
Specialised, Concentrated, Wasteless, Advertising Service.
Complete Advertising Campaigns Planned and Handled. "Copy" Prepared. Best Media Chosen. Lowest Prices and Best Positions Secured.
Company Flotations a Speciality.
Phone 913. Box 3723.
177, STOCK EXCHANGE, JOHANNESBURG.

TRADE AND INDUSTRIES SECTION.

Week in the Mining Material and Engineering Trades.

STRONG FEELING OF OPTIMISM ABROAD AS TO FUTURE BUSINESS CONDITIONS—IRON & STEEL—TIMBER AND BUILDING MATERIALS—AMERICAN NOTES—SOME EXHIBITS AT THE SHOW—UNION'S IMPORTS AND EXPORTS, 1920 AND 1921—FINANCIAL.

General.

For more than a week the Witwatersrand Agricultural Show has overshadowed all else and has, together with the intervening holidays, left little or no time or, for that matter, even inclination for ordinary business. The Show recently held compared, it is admitted on all hands, very favourably indeed with previous ones, notwithstanding the fact that within a month of its opening ceremony an upheaval unprecedented in the history of South Africa had occurred, which seemed to preclude the hope of an exhibition even approximating success being held here. The recuperative properties of the Rand are indeed remarkable when within such a short space of time we can not only hold a Show but a remarkably successful one, comparing very favourably indeed with all previous efforts in that direction, both as regards exhibits and attendance of the public, among whom, as we have now come to reckon upon as a matter of certainty, a large number of country visitors were present. A resumé of some of the more important and interesting exhibits is subjoined, and it is necessary here only to say that the whole Show was of great educational worth to the farmers (and, of course, of great interest to the general public), many of whom doubtlessly to their chagrin were prevented, owing to the present prices of their produce, from taking such advantage of the occasion as they would have liked.

It is altogether surprising that, with the present dearth of ready money, the total attendance of the public should have fallen so very short of the record, which is not only a striking testimony to the popularity of the institution *per se*, but to the general, if somewhat tardy, recognition that agriculture, if now of secondary, is bound eventually to prove of primary importance to South Africa.

Our canvass of the commercial community this week elicited the fact that the Show had been the leading topic to the exclusion of all other subjects, save and except the momentous conference at Genoa and the state of anarchy now prevailing in Ireland. An important man in commercial circles said the Show had been an object-lesson to all of us, as showing the vast possibilities of the land and the marvellous improvements in agricultural implements to extract and work such wealth. The recent visit of the farmers would, he was sure, prove equally beneficial to them and to local merchants. We were undoubtedly making great agricultural strides, and although produce at the moment was low in price, he was convinced that, judging from the cattle exhibited, the country was forging ahead from the viewpoint of agriculture. The recent Show, he said, would have been a credit to any Royal Show at Home. He was pleased to see, on his visit, not only the great interest shown by farmers in the exhibition, but also the courteous explanations and information given to all inquirers by the exhibitors of the different kinds of machinery and implements. In his opinion, everything pointed to well-nigh certainty that within twelve months very considerable progress would be reported, both in regard to agriculture and to general business conditions here; the Show had been, he thought, a wonderful stimulant to both farmer and merchant, one mutually helping the other.

Prices generally are much about the same, fairly steady, with no fluctuations worth recording. Indications all point to steady progress from now on to the end of the year; the rate of progression may be slow but it will, it is generally felt, be sure, although, of course, any untoward happenings in Genoa or Ireland may retard things a little. Not for many weeks—we might say months—have we met with such a general wave of optimism on the part of commercialists as we encountered this week as to the probable course business is likely to take in a future not far distant; all report that the undercurrent is good and that it is only a matter of time and patience—neither, perhaps, to be unduly strained—before we come into our own again in the shape of good, sound and satisfactory business conditions.

Iron and Steel.

Owing to the holidays and the holding of the Agricultural Show, business during the past ten days or so has been confined within very narrow limits. Inquiries are, however, now becoming more numerous and greater activity is looked for on the Commercial Exchange very shortly. A leading American importer said his cables from the States reported prices there as very firm with a tendency to go higher.

Latest Quotations.—Dunswart iron, 22s. per 100 lb. basis price; Union Steel Corporation, Ltd., 25s. basis; imported iron and steel, flats, rounds and squares, from 28s. 6d. to 35s.; channels and joists, 30s. to 32s. 6d.; imported angles, 32s.; smaller sizes, 33s. 6d.; tee iron, 32s.; shafting, ½ in. down to 3-16 in., 7½d. to 9d. lb.; ⅝ to 1½ in., 6½d.; 1¾ in. to 6 in., 5½d.; steel plates, 1-16, ⅛, 3-16, 23s. 6d.; 10 x 5 and larger, 25s.; spring steel, 7½d. to 8½d. lb.; bolts and nuts, hexagon, round, ⅜, 8½d. to 9¼d. lb.; ½ in., ⅝ and ¾, 40s. to 45s. per 100 lb.; hexagon nuts, ⅜, 8½d.; ½ in., ⅝ and ¾, 7½d.; fish plates, bolts and nuts, ⅜ in., 8d. lb.; ½ in., 6d.; ⅝ in., 5½d.; ¾ in., 5d.; dog spikes, 35s. per 100 lb.; rivets, ¼ in., 11d.; ⅜ in., 9d.; ½ in. and ⅝ in., 37s. 6d. to 40s. per 100 lb., ⅝ in. 50s.; brass rods, ¼ in. 1s. 5d.; ⅜ in. 1s. 3d.; ½ in. 1s. 2d.; ⅝ in. upwards, 1s. 1d. per lb.; hexagon brass rods, 1d. lb. extra; copper rods, ⅜ in., 2s.; ½ in., 1s. 11d.; [illegible] and upwards, 1s. 9d. lb.; tool steel, 2s. 11d. to 3s. 3d.;

JUST PUBLISHED.

PROVISIONAL

Geological Map of Southern Rhodesia.

On one sheet measuring 33 by 35 inches.

Scale 1 : 1000000, *or about* 16 *miles to one inch.*

Showing the geological formations in 12 colours, sites of the principal mines, railways, rivers, etc. Compiled by the Geological Survey of Southern Rhodesia, and sold at the Mining Commissioner's Offices in Bulawayo, Gatooma, Gwelo, Salisbury, Umtali and Victoria.

Price £1 (postage to the Union 1/1 extra).

brass sheets, 1s. 10d. to 2s. lb.; copper sheets, ¼ in. to 18 gauge, 1s. 10d. lb.; 20 gauge, 1s. 11d.; 22 gauge to 28 gauge, 2s. lb.; firebox copper, 2s. lb.; copper tubes, ¼ in., 3s. 3d.; ⅜ to ⅝ in., 2s. 6d.; ¾ to 4½ in., from 2s. to 2s. 4d. lb.; phosphor tin, 2s. 11d.; ingot tin (Lamb & Flag), 2s. lb.; ingot lead, £28 per ton; drill steel, 6½d.; hollow, 9¾d.; 1¼ in., 9d. to 10½d.; wire nails, 30s. to 35s.; shovels, 30s. to 40s. doz.; wheelbarrows, 40s.; picks, 37s. 6d. to 50s.; pick handles, 19s. 6d.; hammer handles, 14 in., 7s. 6d.; 18 in., 9s. 6d.; 24 in., 13s. 6d.; 30 in., 17s. 6d.; 36 in., 25s.; barbed wire, "Shorthorn," 69 lb., 13½ gauge, 22s. per coil; plain galvanised fencing wires, No. 8 gauge, 100 lb. coils, 20s. to 22s. per coil; No. 10 gauge, 100 lb. coils, 25s. per coil; No. 12 gauge, 100 lb. coils, 26s. 6d. per coil; bulb tee fencing standards, 14 lb., 24s. 6d. per dozen; 12 lb., 23s. 6d. per dozen; black baling wire, 14 gauge, 19s. per coil, 100 lb.; 12 gauge barbed wire, 22s. per coil, 96 lb.; plain wire, No. 8 galvanised, 21s. per coil, 100 lb.; fencing standards, 12 lb., 20s. per dozen; droppers, 4 ft., 1½ lb., 4s. 3d. per dozen; screening, 3s. to 9s. 6d. per sq. yd.; cyanide, 1s. 7½d.; zinc shavings, 1s. per lb.

In Britain the engineering and shipbuilding trades' crisis, according to latest advices, overshadow the markets, although a steady flow of inquiries is being received by pig-iron producers. Business in hematite is particularly brisk, and preparations are forward for blowing in several more furnaces. Practically the whole of the April output has been sold. Cleveland remains firm with an upward tendency. No. 3 is quoted at £4 10s. per ton. Inquiry for lower grades is poor. Foreign competition is negligible, and British steel producers are executing orders for the Continent owing to the inability of the Belgians to complete contracts. There is a considerable increase in orders for semi-finished steel. According to the *Observer*, four great engineering orders from abroad, involving £20,000,000 sterling, have been placed with British firms.

The coal export trade is improving owing to the American strike increasing the Home demand, and the willingness of the workers at Welsh ports to work extended hours.

The Yorkshire woollen centres are doing better; but the shipbuilding trade is stagnant.

Altogether there appears to be undoubted signs of a trade revival in Britain. The trade returns for March reveal a tendency to increase exports, while the borrowing by great business concerns in England and business houses and the Dominion Governments abroad means that the borrowers are spending the money with beneficial results to trade.

Cable advices from New York are that business has brightened up considerably, with the rise in sterling, practically all markets are advancing. Steel manufacturers are enlarging production, and with the possibility of higher prices the situation is more assuring. Stocks of steel throughout the United States are low. There is little buying. The Steel Corporations are now operating around 70 per cent. of capacity. The price tendency is stronger. Sales of copper are increasing. June delivery is quoted at 13 cents.

Simmer Deep, Ltd. (in Liquidation).

Tenders are being called, closing to-day, by the New Consolidated Gold Fields, Ltd., as liquidators, for the purchase of the balance of the machinery and plant on the above company's property, consisting of engines, pumps, electrical equipment and motors, shop machinery, piping, etc.

Timber and Building Materials.

Business, in spite of the holidays, has been fairly satisfactory, and is expected to go ahead briskly very soon. 3 x 9 deals are very firm and are likely to go higher shortly. Baltic prices remain very firm.

Timber prices.—3 x 9 deals, 1s. to 1s. 1d.; scantlings, 11d.; beaver boards, 4¼d. to 4½d.; floorings, 6¼d. to 6½d.; ceilings, 4¼d. to 4½d.; Oregon, 5s. 6d. to 6s. 6d. a cube; pitch pine, 7s. 6d. to 8s.; corrugated iron, 8d. to 9d. Furniture timber: Burmah teak, 17s. 6d. per cube here for first quality, 14s. 6d. for second at the coast; American oak, 1 in., 10½d.; 1½ in., 11d.; 2 in., 11½d., at coast; and Japanese oak, 1 in., 1s. 1d.; 1½ in., 2 in., 1s. 2d., at coast; West African mahogany, 1 in. to 4 in. thick, 26s. 9d. to 27s. 6d. per cube at coast; Rhodesian mahogany, 9s. per cubic foot at mills; Honduras mahogany, 30s. per cubic foot; American yellow pine, 1s. 6d. per foot of 1 x 12 here; American pine shelving, 10½d. per ft.; 3-ply wood, 3 m.m. up to 5 m.m., alder and birch, 4d. to 6½d. per sq. ft.; oak and teak, 3-ply, 11d. per sq. ft. Prices for bricks remain unchanged at: Klompje bricks, 25s. per 100 at works; fire bricks, £10 per 1,000 at works; mixed, 70s.; wire-cuts, £4 10s. to £5; and £5 for pressed per 1,000, at kilns; columns from 20s. to 30s., according to size; roofing tiles, Marseilles, £25 per 1,000 at the works; chimney pots, 12 in., 7s. 6d.; 15 in., 9s.; 18 in., 10s. 6d.; lead oxide, 16s. per 100 lbs.; white lime, 7s.; unslaked, 10s. 6d. per 180 lb. bag; 8 lb. bag, 1s.; blue lime, 4s. 3d.; blue plaster lime, 5s. 3d.; cement, 11s. 6d. a bag; damp course and roofing, 36s., 54s. to 55s. for 1 to 3-ply.

Second-hand Timber and Iron.

There is nothing new to report this week in this section, but dealers are looking forward to much improved business very shortly. Iron is selling at 5d. to 6d.; timber at 8d.

Union's Crying Need of Timber.

Mr. D. Mackie, of Pretoria, at the annual Congress of Building Trades' Employers in the City Hall, said that during 1913, the last normal year prior to the war, the Union imported 15½ million cubic feet of unmanufactured timber, in addition to £252,000 worth of manufactured timber, making a total value, exclusive of furniture, of £1,232,000. Of that amount, 90 per cent. was soft timber, which had presumably been used in the building trade. He thought it must be admitted that there would be an appreciable increase during the next ten years, and that generally the importance of timber-growing to the Union was not realised. He referred to the statement in 1919 of the responsible Minister in Parliament, regarding the sale of Government timber at Tokai Estate. That timber was between thirty and thirty-five years' old. The cost of planting, interest on capital, maintenance, etc., was estimated at £84 per acre, while the gross yield was reckoned at £426 per acre, giving a net yield of £342 per acre, or £10 per acre per annum. He noted that the British Empire Forestry Conference, which met in London last July, realised the importance of afforestation in the Empire; but he maintained that the Union Government had not yet realised the importance of an adequate scheme of afforestation to the Union.

American Notes.

In a chat this week with the American trade representative he said the most important thing in the United States to-day is the coal strike, and it is very significant, he added, that we are getting very little information from the States in reference thereto, which seems to indicate that the strike is not meeting with much success, nor having much effect

ASBESTOS
PROPERTIES and FIBRE
ARE PURCHASED BY
AFRICAN ASBESTOS MINING CO., LTD.
P.O. Box 504, BULAWAYO
Telegrams: "Safasco," Bulawayo 'Phone No. 356
Johannesburg Correspondents:—HUGGINS & CO., LTD.
Consolidated Building ——— JOHANNESBURG
Telegrams: "Turbros" P.O. Box 5106 'Phone 574

[illegible] continuance of the present system with modifications; such [illegible] on the President permitting him to regulate the tariff accord- [illegible]

British Steel and the American Tariff.

[illegible] the tariff.

SOME EXHIBITS AT THE SHOW. MINING MATERIALS AND AGRICULTURAL IMPLEMENTS.

Union Steel Corporation (S.A.), Ltd.

[illegible] at Vereeniging. Interesting also were samples of fluxes used in the manufacture of steel. It was only meet and [illegible] undertaking should [illegible] various products. The corporation [illegible] a new plant to roll heavy sections, including big angles, channels, and I beams. They report themselves as being busy and are now delivering stuff in connection with the erection of the [illegible]

African Iron and Steel Products, Ltd.

[illegible] processes to the [illegible] there was quite a number of people here who were surprised [illegible] manufacture [illegible] strating same with a full sized section of a 5 ft. 6 in. mill, also a section of the new type liner showing the improvement [illegible] in comparison with the old type liner. The old type being made 16 in. long by 12 in. wide having three [illegible] to each, which gave a very poor spacing in the mill when set up. The new type liner, which is made in blocks 20 in. long by 8 in. wide and with only two bars on each block, which give an even spacing all round the mill, this ensures the mill picking up and retaining the pebbles very quickly and evenly over the entire surface of the mill. These blocks are now made in 5 in. and 4 in. deep bars to suit the requirements of different mines also are installed in the mills half 5 in. and half 4 in. in the feed and discharge ends respectively. There was also an example of tube mill grids the feature of same being the clean and even taper on the holes which is so essential to good tube mill work. Other lines being municipal water meter boxes, waggon bushes, grease trap covers, sink grids, manhole covers, etc. All the above are samples of mass production which the company specialise in, the plant being equipped with machines for all classes of mouldings. Mr [illegible], the manager of the company, is very satisfied with the result of the exhibits, as it has brought the company in touch with many outside lines of business that the general manufacturer did not know we were able to produce at a cost below the imported article, which is the object the company are out to attain—local product and advancement of South Africa, which only can be obtained by such local industries.

The Denver Rock Drill and Machinery Company, Ltd., had an excellent exhibit of tractors, threshing machines silo fillers and hay balers, around which a great deal of interest centred. Among these were: Case paraffin tractors in three sizes, 10-18 h.p., 15-27 h.p., and 22-40 h.p., with Grand de Tour tractor gang-ploughs, Case all-steel threshing machines, Case silo-filler, Case hay balers. The display attracted very great interest on the part of the visiting farmers, to whom all possible information was very courteously given by the representative of the company.

The Clyde Trading Company, Ltd., made a very interesting exhibit of all kinds of fencing materials, including the various products manufactured by Messrs. Richard Johnson and Nephew, Ltd., Manchester, in which featured the well-known brands of "Porcupine," "Shorthorn" and "Hornet" barbed wires, also high-strained "Dreadnought" plain fencing wires. It will be of interest to note that the Argentine, which is a large cattle-ranching country, has imported thousands of tons of this class of plain high strained wires. The Clyde Company further exhibited a fine display of galvanised wire netting, the product of Messrs. Boulton and Paul, Ltd., Norwich, for poultry, sheep, jackal and chickens. This netting is heavily galvanised and true to mesh and gauge. A further striking exhibit was the "Chaine-Helice" patent liquid elevators, which attracted thousands of farmers. The simplicity of this elevator was demonstrated and astounded the onlookers by the easy manner in which water can be elevated from deep or shallow wells. These "Chaine-Helice" liquid elevators have the following advantages: They are perfectly hygienic, giving free circulation of air in the well, are not affected by frost, depth of well is immaterial, and will handle any liquid or semi-liquid; there are no fixtures, pipes, buckets or valves required, the liquid is simply lifted by means of a spiral chain. The elevators are constructed for hand or power, prices are low, and upkeep practically nil. Another exhibit by the Clyde Company was of "Varesco" droppers—the first shipment received since the Great War—and were demonstrated on a fence erected on the stand. The great feature of the "Varesco" dropper is that it will fit any number of spacing of fence wires, and are attached to the fence wires by means of a special loop supplied with the dropper. They are, it is claimed, the lightest and strongest droppers on the market, and pre-War users will be glad to know that they can again be obtained. Other items of interest on this stand were farm gates, fencing standards and straining posts; a complete range of paints ground in oil, manufactured by Messrs. Alexander Fergusson and

MINES DEPT. EXAMS.
CERTIFICATES AWARDED INSTITUTE.

MANAGERS' EXAMS., September, 1921, January, 1922.

We obtained 15 out of a total 22 certificates awarded in South Africa

	Metal	Coal	Totals
Ours	9	6	15
Rest of S.A.	4	3	7
		Total for S.A.	22

OVERSEERS' CERTIFICATES (Metal).
So far as we know we have only had 6 failures during 1921, and [illegible] in S.A. during the past two years.

TUITION (Metal or Coal) by class, correspondence or privately

Mining Institute (Prof. Yates),
St. James' Mansions, Eloff St. Johannesburg

Company, Glasgow, and also ready mixed paints of the "Red Hand" brand, Silvertown Works, London, were also shown. The Clyde Trading Company is to-day carrying a very comprehensive range of all kinds of fencing materials, picks and shovels, carbide, galvanised iron, timber and roofing felt.

Messrs. Reunert and Lenz, in addition to the reproduction of the front of a Babcock and Wilcox boiler, displayed an "Atlas" semi-Diesel engine to run on crude oil; a first model of a local invention, viz., a "Sirocco" fan, primarily for use in mines; a new Swedish "Atlas" rock drill, and a Belliss and Morcom (Birmingham) single acting sets—designed for the lighting of small farms. These generating sets start up on petrol and then are switched on to paraffin. This exhibition attracted much attention.

Messrs. Stewarts and Lloyds (S.A.), Ltd., showed, amongst others, a vertical petrol paraffin engine, manufactured by the National Gas Engine Company, Ltd. This engine is the latest development in internal combustion engineering, and has a continuous output of 5½ brake horsepower. The Davey Paxman portable steam engine was well to the fore, as also centrifugal pumps manufactured by Messrs. Gilbert Gilks and Company, Ltd. A "Climax" windmill was also noticed—altogether a notable display.

Amongst **Messrs. Dowson and Dobson's** exhibits was a Vickers-Petters semi-Diesel crude oil engine. The special feature of this engine is that it can be started up immediately from coal or crude oil by means of the Vickers-Petters patent electric starter. These engines are made in sizes from 25 h.p. to 500 h.p., and are the most reliable and cheapest form of power to-day.

Hansford and Hansford had a very interesting exhibit of paints, colours and other decorative as well as house-building materials, which attracted much interest.

The motor section, as was natural, was crowded by visitors to see the magnificent display of cars exhibited, which proved indeed to be one of the great features of the show.

Union's Imports and Exports, 1920 and 1921.

The totals for the 12 months ended respectively 31st December, 1920, and 1921, are as follows:—

	1920.	1921.
Imports	£107,502,039	£61,473,849
Exports	86,058,997	65,068,555

which show a decrease in imports of £46,000,000 and of exports of £21,000,000. The principal declines in imports were: Soft goods, £15,000,000; food and drink, £7,250,000; hardware and cutlery, £2,250,000; motor cars, the same; iron and steel manufactures (excluding machinery), £2,000,000; wood and timber, £1,000,000; implements (including agricultural machinery) and tools, £500,000. Manufacturing and mining machinery each display a slight increase, whereas other machinery imports are smaller than in 1920. The number of motor cars imported is returned at 2,093, as against 10,097 during the previous year. Contributory to the decline in exports have been diamonds £10,250,000, wool £7,750,000, hides and skins £3,000,000. Exports of raw gold are lower by £1,708,00. Food and drink have increased by £3,500,000, and fruit shows also a satisfactory advance. £57,000,000 worth of our exports went to the United Kingdom and £2,434,53 to Germany, as compared with £570,346 during the preceding year. Exports to the United States were valued at £2,250,000 as compared with £4,500,000 in 1920.

World's Motor Vehicles.

It is estimated that over 12,500,000 motor vehicles are in use throughout the world at the present time, of which the United States own 10,505,660, Great Britain 497,582, Canada 463,448, France 236,146, Germany 91,384, South Africa 26,468; but, allowing for non-renewal of licences, etc., the latter figure should, it is thought, be nearer to 32,000. In the Union the proportion of cars per capita is about one in 50; in the United States it is one in 10; and in Canada, one in 16.

Oil Fuel.

The "Mauretania," on her first voyage as an oil-burning vessel, from New York to Cherbourg, established a world's record by making the trip in 5 days 10 hours 9 minutes.

Financial.

London advises that arrangements have been made to place four millions in Union Treasury Bills with a currency of six months and a rate of discount of approximately 3 per cent. It is anticipated that South Africa will raise a new loan to provide for the maturing of these bills.

The Bank of England rate has been reduced to 4 per cent., which is the first time since 1914 that the rate has been so low.

Lower Cost of Living in Britain.

The Board of Trade returns show that wholesale prices in March fell 1·2 per cent. compared with February, making a fall of 7·6 per cent. since November last.

Trade Inquiry.

A firm of manufacturers of oak tanned leather, belting and kindred leather lines has informed the American Trade Commissioner of their desire to secure representation in South Africa. The firm produces quality lines, and is anxious to link up with a first-class local house. Any of our readers interested should communicate with Mr. P. J. Stevenson at his office, 42 Standard Bank Chambers, or P.O. Box 6989, Johannesburg.

A Record Casting.

The largest iron-casting ever made in Great Britain, and one of the largest ever produced in any country, was recently turned out in a British factory. It weighed about 110 tons and the mould was built in a 16-foot pit. Seven hours were occupied in melting the metal, and the casting was poured in just under five minutes. Three weeks were occupied in cooling the casting. Owing to its enormous size and weight the casting had to be delivered by road, six traction engines being used for hauling it.

INVESTORS' DIARY.

Meetings will be held in Johannesburg unless otherwise stated:—

April 28.—Coronation Syndicate.

May 23.—S.A. Land and Exploration Co., 12 noon.

May 29.—West Springs, 11 a.m.; Daggafontein Mines, 11.30; Springs Mines, 12 noon; Brakpan Mines, 2.30 p.m.; Rand Selection Corporation, 3.15 p.m.; New Era Cons., 3.45 p.m.

May 29.—Union Corporation; 11 a.m.

June 3.—Transvaal Coal Corporation, 10.30 a.m.; Anglo-American Corporation, 11 a.m.

May 26.—Modder Deep Levels, 12 noon; Geduld Proprietary Mines, 3 p.m.

June 8.—New Primrose, 11.30 a.m.; New Unified, 11.45 a.m.; Langlaagte Estate, 12 noon; Randfontein Central, 3 p.m.; Randfontein Estates, 3.30 p.m.

June 9.—Consolidated Langlaagte Mines, 10.30 a.m.; Witwatersrand G.M. Co., 10.50 a.m.; New State Areas, 2.40 p.m.; Van Ryn Deep, 3 p.m.; Government Areas, 3.45 p.m.

The annual meeting of Lydenburg Gold Farms, Ltd., is called for May 16. Of the 250,000 shares of 4s. issued it is proposed to pay off 1s. 6d. per share.

PORTABLE STEAM PUMPS.
Genuine Merryweather "Valiants" Brand New, with many accessories, at about HALF THE MAKER'S PRICE, solely owing to being British Government surplus. Great Bargains. Especially suitable for every description of pumping work, including drainage of excavations and mine workings, well boring, irrigation, etc. Full particulars from—
E. W. FARROW & SONS (Ref. 52), SPALDING, ENG.
Cables: "Farrow," Spalding.

The Kolmanskop Diamond Mines, Limited.

(Registered in the Province of the Cape of Good Hope.)

BALANCE SHEET as at 31st December, 1921,

LIABILITIES.

To Capital Account: 100,000 fully paid-up shares of 25s. each		125,000 0 0
Reserve		24,250 0 0
Reserve for Government Duty	£1,000 0 0	
.. Selling Expenses	1,300 0 0	
		2,300 0 0
Reserve for probable loss on conversion of German paper currency as per contra		10,356 15 6
Sundry Creditors		1,473 14 [illegible]
Government of S.W.A.		21,941 7 [illegible]
Wages Due		122 10 [illegible]
.. Unclaimed Dividends		187 16 0
.. Profit and Loss Account		96,217 3 9
Contingent Liability of M.124,575 on interest held by Geschaftstelle der Kolmanskop Diamond Mines, Ltd. Zu Capstadt G.m.b.H.		
		£281,850 12 1

ASSETS.

By Property A/c. Leasehold		£123,839 7 9
.. Northern Fields	£94,802 7 7	
.. Southern Fields	29,037 0 2	
.. Investment in Shares		2,054 15 [illegible]
.. Freehold Property	1,000 0 0	
Less Depreciation	100 0 0	
		900 0 0
.. Buildings	4,084 16 8	
Plus Additions during year	1,990 0 4	
	6,074 17 0	
Less Depreciation	1,214 17 0	
		4,860 0 0
.. Permanent Works	1,200 0 0	
Less Depreciation	300 0 0	
		900 0 0
.. Machinery and Plant	6,064 13 10	
Plus Additions during year	5,275 3 4	
	11,339 17 2	
Less Depreciation	2,267 19 5	
		9,071 17 9
.. Rolling Stock	965 13 0	
Plus Additions during year	2,645 9 5	
	3,661 2 5	
Less Depreciation	722 0 2	
		2,889 2 3
.. Live Stock	700 0 0	
Plus Additions during year	51 0 0	
	751 0 0	
Less Depreciation	251 0 0	
		500 0 0
.. Furniture and Fittings	25 0 0	
Plus Additions during year	11 0 0	
	36 0 0	
Less Depreciation	18 0 0	
		18 0 0
.. General Inventory	1,568 15 6	
Plus Additions during year	757 8 11	
	2,326 4 5	
Less Depreciation	777 4 5	
		1,549 0 0
.. General Stores		9,298 2 [illegible]
.. Diamonds in Possession of Diamond Board for S.W.A.		43,136 0 0
.. Sundry Debtors		650 0 1
.. Diamonds Unsold (Pre-War) Valued at advances received from Diamond Regie M.17,620.30.		863 14 10
.. Government of S.W.A.		3,670 0 0
.. Diamond Regie As per Contra.		10,356 15 6
.. Remittances to Germany for purchase of Mining Materials		100 0 0
.. Payments in Advance		138 4 [illegible]
.. Accrued Interest		756 9 0
.. Cash and Treasury Bills		66,299 7 2
		£281,850 12 1

GRANT, GRANT & CO., Secretaries.

J. C. RIMER,
P. C. GRANT, Directors.

We have examined the foregoing Balance Sheet, with the Books and Vouchers of the Company kept at Capetown, and are of opinion that it is a full and fair Balance Sheet, containing the particulars required by the Company's regulations and properly drawn up so as to show a true and correct view of the state of the Company's affairs at the date thereof.

Capetown, 20th March, 1922.

E. R. SYFRET & CO.
HANDS & SHORE, Auditors.

PROFIT AND LOSS ACCOUNT 1st January to 31st December, 1921.

To Mine, Head Office and General Expenses ...	£95,332 11 5
.. Duty on Diamonds (estimated)	1,000 0 0
.. Selling Expenses (estimated)	3,456 9 9
.. Depreciation written off Buildings, Machinery, Rolling Stock, etc.	5,651 1 0
Balance	16,664 4 1
	£122,106 6 3

By Diamond Account	£115,105 5 6
.. Interest	3,166 6 3
.. Rent	24 10 0
.. Retail Store (Profit)	657 8 5
.. Exchange	3,152 3 3
.. Sundries	0 12 10
	£122,106 6 3

APPROPRIATION ACCOUNT.

To Dividend of 25 per cent. paid Oct. 31, 1921	£31,250 0 0
.. Balance carried to Balance Sheet	96,217 3 9
	£127,467 3 9

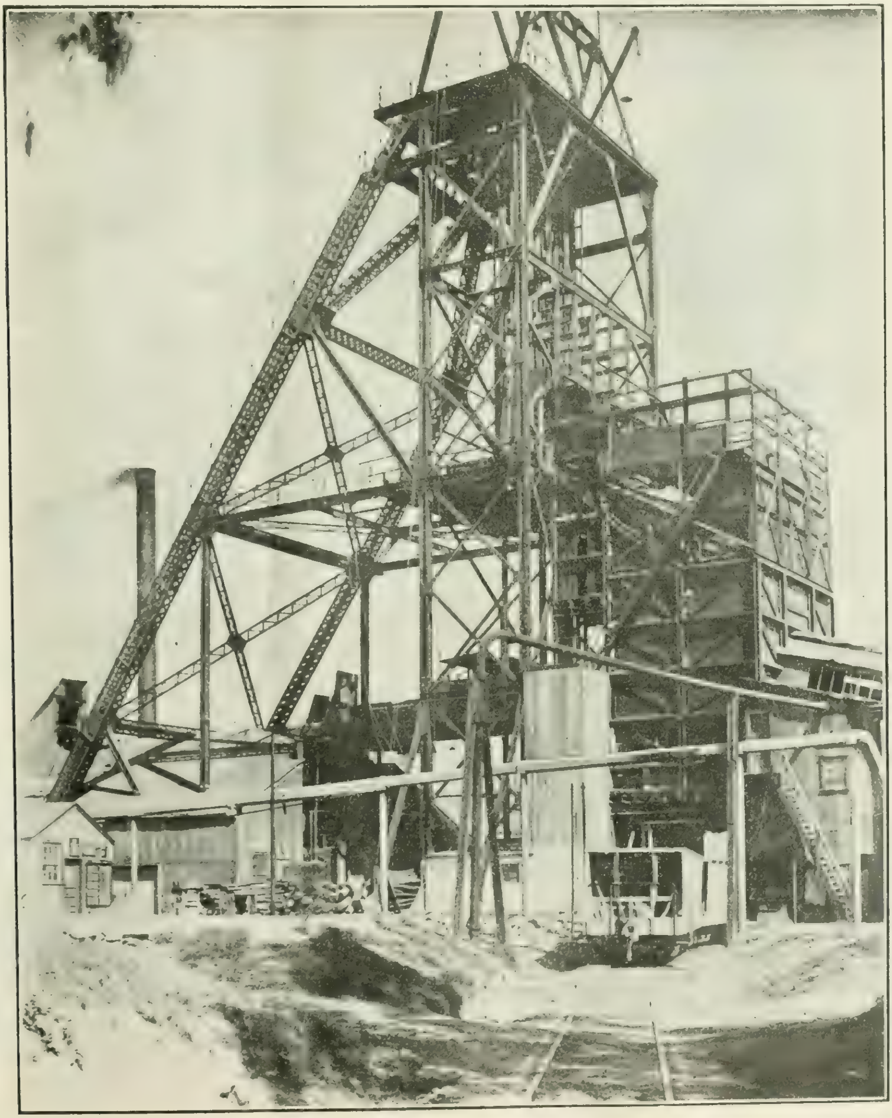
By Balance brought down	£16,664 4 1
.. Balance Realisation A/c. Pre-War	110 12 9
.. Balance Realisation A/c. 1919	3,232 9 6
.. Balance Realisation A/c. 1920	2,321 1 8
.. Balance from last year's account	105,138 15 9
	£127,467 3 9

Dividend Prospects—Why Mine and Mill Waste Rock?
Sabie Gold Fields.

The South African
Mining & Engineering Journal
THE ONLY WEEKLY MINING PAPER IN THE CONTINENT OF AFRICA.
Established 1891.

Vol. XXXIII., Part I. JOHANNESBURG, TRANSVAAL, SATURDAY, APRIL 29, 1922 No. 1596

Shaft at Langlaagte Deep Section Crown Mines.



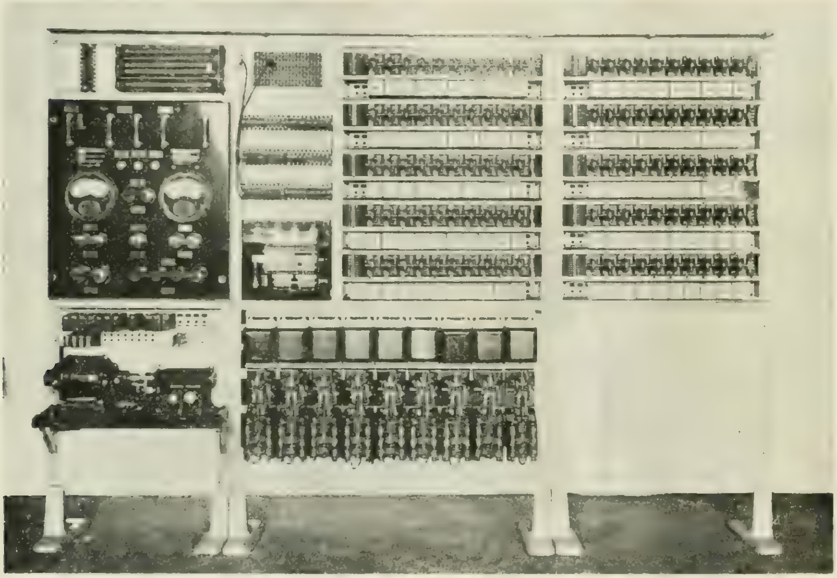
The Crown Mines property was visited early in the week by the members of the Mining Industry Board.

SIEMENS BROTHERS

AUTOMATIC TELEPHONES

In addition to a number of
PUBLIC EXCHANGES FOR LARGE TOWNS
we have supplied scores of
PRIVATE AUTOMATIC EXCHANGES

Our EXPERIENCE is wide—Our SATISFIED CUSTOMERS numerous



PRIVATE AUTOMATIC EXCHANGE BOARD 100 Working Lines

CHEAP TO MAINTAIN—SIMPLE TO WORK

IMMEDIATE DELIVERY FROM LOCAL STOCK

Representatives in South Africa:

A. J. G SIMPSON, A.M.I.E.E.
African Life Buildings, 85, St. George's St.,
CAPE TOWN.
P.O. Box 239 Cape Town. Telephone 1202 Central.

G. H. B. BERNARD, A.M.I.E.E.
9-10, Cotts Buildings, Rissik and Fox Sts.
JOHANNESBURG.
P.O. Box 7404 JOHANNESBURG. Telephone 408 Central.

Telegrams: "SIEMENS"

Rand Mining Methods Discussed.

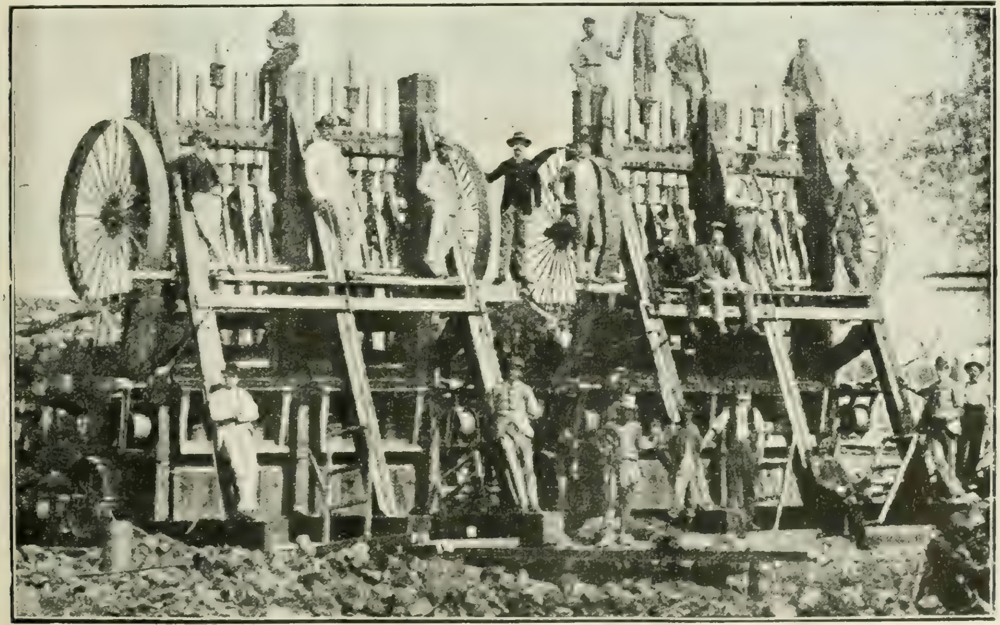
THE DECENTRALISATION TENDENCY—CHAMBER OF MINES AND ITS FUNCTIONS—HAS CENTRALISED BUYING DESTROYED COMPETITION—HERITAGES OF THE BIG MILL POLICY—THE FETISH OF COST PER TON AND THE SANITY OF COST PER OUNCE—THE RAND MINING AND MILLING TOO MUCH WASTE ROCK—A PLEA FOR CLEANER STOPING—SOME STARTLING FIGURES—" ONE EVERLASTING SCRAMBLE FOR STUFF "—THE NEGATION OF EFFICIENCY.

The position, prospects and problems of Witwatersrand mining have received a more than usually large amount of prominence recently, and it is clearly evident that the many aspects and controversies concerning an industry which carries the whole country on its back are certain in the near future to figure even more prominently in the limelight than ever. The Rand is the mainstay of South Africa. Its industrial ramifications extend into every corner of the country, and its problems of sociology and finance impinge upon every problem, soluble or insoluble, in the political skein which a hundred and a half paid legislators have been tangling into further knots for several weeks past at Capetown. One is perhaps entitled to look for more clarity of thought in the councils of the new Industrial Commission than in the political bear garden under Table Mountain, and, inasmuch as this Commission is now beginning to take evidence we make no apologies for returning to the subject of the problems, perplexities and prospects of this goldfield; themes which have been much debated in the columns of this journal during the past few months.

The Rand in Metamorphosis.

The general conception of affairs is that the whole status of and outlook for the Main Reef series has been altered by the strike and its sanguinary settlement. No one with the slightest knowledge of the true facts will attempt to deny that the Rand was in the very direst need of radical reform. In plain language, it had to effect a large reduction in working expenses, for the simple reason that many of its mines were selling the commodity which they produced at a price below the cost of output.

The mines could not raise the price of the product. The only thing which they could do, then, was to lower the cost of marketing what they produced. The managements therefore sought to amend the position in regard to white labour, which had been steadily becoming more expensive, more aggressive, and less efficient ever since the outbreak of the Great War. Whether the Rand's labour troubles have permanently been solved by the events of the past few months—whether indeed they have been settled for any



A Stamp Battery in the early days of the Rand, when mines were worked as independent units.

[illegible] [illegible] this position for further expansion [illegible] which we here propose to touch on. The central executive organisation of the industry as represented by the Chamber of Mines only took action after the [illegible] position had become precarious and after most independent critics, and particularly the unfortunate shareholders, had begun to wonder whether the Chamber was going to sacrifice the rights of shareholders to the [illegible].

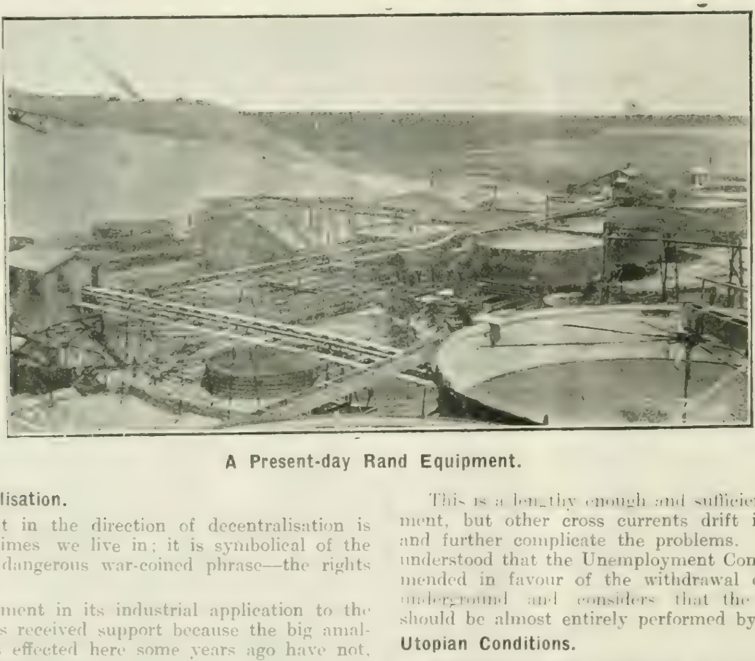
Functions of Chamber and Managers.

One result of the [illegible] of the [illegible] is that there is now a strong agitation in favour of restoring authority to the managers of the mines. This movement has, in fact, been in progress for months and has received the enthusiastic support of the mines. But this reaction must be within limits. There must still be a constituted authority which will be the central executive of the capital side of the industry and which, provided it does not attempt to function outside of its proper sphere of action, can achieve a vast amount of good by voicing the united views of the mines by exercising a proper prerogative in regard to such matters, for instance, as allegations of "victimisation" by representing the interests of the Witwatersrand in international labour councils and to Government Commissions, and so forth.

the amalgamation policy might have been successfully [illegible]. But on the contrary reef developments generally have disclosed poorer values, the workings have become deeper and more dissipated, labour has become less efficient and more costly, taxation has increased, and the mines have become burdened with more and more legislation. To what extent amalgamation has been responsible for the growth of these disadvantages is hard to say, but that the grand idea has been instrumental to a considerable degree in creating an atmosphere in which some of these seeds will propagate in the field of gold is undeniable.

A Big Indictment.

Underlying the whole ambitious conception are the bugbears of over-capitalisation and the too big mill. A very important and influential mining man launched a damning indictment of the Rand and its methods some time ago. He declared to us that the Rand was over-capitalised, over-stamped, and over-centralised, that it was torn between the conflicting forces of administration by Brunswigas and agitation by professional mischief makers, that authority had been wrested from the mine managers to the great detriment of the mines, that centralised buying had destroyed competition in regard to the supply of stores and machinery to the mines, and that the conception of the mines themselves belonging to the Government or the Chamber of Mines or the Labour unions, or even the controlling groups, in fact, to anyone or any body or organisation other than the shareholders was entirely wrong.



A Present-day Rand Equipment.

Towards Decentralisation.

This movement in the direction of decentralisation is typical of the times we live in; it is symbolical of the agitation of that dangerous war-coined phrase—the rights of small nations.

And the movement in its industrial application to the Witwatersrand has received support because the big amalgamation schemes effected here some years ago have not, for a variety of reasons, succeeded to the extent they were expected to do.

Practice versus Theory.

In theory the principle of one mine manager's salary instead of three mine managers' salaries seemed unimpeachable as a means of reducing working expenses. The idea appeared to be capable of application to the whole range of administration. It could, it was thought, reduce the number of shafts at work and effect economies in plant, in offices, and everything else. But in actual practice the grand idea, the big project, and the farseeing vision have created undertakings too unwieldy to be really efficient, too large to be economical. If the Main Reef series had been able to disclose large and unsuspected treasure troves in the shape of huge zones of very rich ore, the shortcomings of the

This is a lengthy enough and sufficiently complex indictment, but other cross currents drift into the maelstrom and further complicate the problems. It is, for instance, understood that the Unemployment Commission has recommended in favour of the withdrawal of white men from underground and considers that the below surface jobs should be almost entirely performed by natives.

Utopian Conditions.

According to these views, then, the ideal conditions for mining on the Witwatersrand might be summed up as follows:

(a) Mines working more or less as independent units.

(b) Managements not hampered by either labour dictation or interference or domination by the Chamber or head offices.

(c) Management not to be obsessed with a fear of hanging up a considerable number of stamps where the mill is unwieldy.

(d) Mines to be worked as far as possible underground by natives, which would imply reduced phthisis taxation and ability to expand the scope for European employment at a fair rate of wages on surface.

The Meaning of " Efficiency."

The ultimate objective of any radical changes in policy would of course be to promote efficiency. That word efficiency is the key to the whole position. In some circles the word is regarded with disfavour as creating a rather vague and nebulous conception of the state of affairs which it is desired to create.

But the word efficiency in its purest sense means the character or quality of being efficient; the power that accomplishes a desired or designed work. Specifically it implies the state of possessing adequate skill or knowledge for the performance of a duty or calling. It therefore clearly has an application to mining on the Witwatersrand, the ultimate aim or duty or calling of which is the extraction of a maximum amount of gold at a minimum of expenditure consistent with safety and the ordinary dictates of decent labouring conditions.

Cost per foot and Cost per ounce.

Having accepted this definition of " efficiency " in its application to the Rand, it becomes clear that the term working costs per ton is not, or should not, be the criterion of efficiency or inefficiency. The cost of production of the gold is the ultimate factor upon which our ability as miners must be judged. The obsession for low working costs per ton may go too far. It went too far in the past and there are indications that it will become a fallacious fetish in the future unless we keep the cardinal fact clearly before us and do not allow its significance to be cloaked by the empty slogan of low costs without reference to output. That cardinal fact is simply this, that the mere rock without gold content is useless and that upon the measure of production of gold in relation to the cost of that production depends our status as an industry.

In the Field of Wide Stopes: Underground Scene on the Rand.

Too Much Rock, Too Little Gold.

Long ago critics contended in the columns of this journal that the Rand was mining, hoisting, crushing and treating far too much ore for far too little result. They argued that a large amount of barren ore was being handled. The breaking of waste rock cannot be altogether obviated. But the mining of rock which yields nothing except tonnage, which achieves nothing except the continual running of plants which are too big for the mines they were designed to serve, can be reduced to a minimum by narrowing the widths of Rand stopes to a minimum.

Some of these critics contended that twice as much rock as was necessary was being mined, transported to the shaft station, hauled up the shaft and treated. In other words, they argued that the same amount of gold could be produced for half the tonnage handled by means of cleaner mining and closer sorting both underground and at surface.

Increasing Stope Widths.

Those criticisms never have been disproved; on the contrary, they have become more and more justified by facts and figures as the years have sped by, and the efficiency of the Rand's underground labour force has declined. Generally speaking stope widths on the Rand are carried far too large. In other fields where more efficient miners are employed and where every technical and conomical consideration is not subordinated to the voracious demands of the big mill, the stope widths would be kept much cleaner and narrower and the reef broken and milled would not be diluted with nearly so much waste rock.

Cases in Point.

To give one or two specific instances of practice on the Rand to-day, we may cite a few figures taken from the last report of the Crown Mines, Ltd., a property which is made up of several smaller propositions merged into one gigantic whole during the time when amalgamation was so much in facour. The Crown Mines was visited by the members of the new Industrial Commission during the week, and it may certainly be regarded as typical in its lay-out, reef characteristics and working methods of the Central Rand.

Some Startling Figures.

The reports of this company for the last year are now available and state, *inter alia*, that the ore reserves, re-measured and re-valued at December 31st, 1921, was as follows in respect of tonnage available:

	Tons.	Value. dwts.	Stope width. inches.
Main Reef Leader ...	3,999,300	6·5	60
South Reef	3,203,500	5·3	62
Totals and averages..	7,202,800	6·0	

Another Big Rand Stope.

During the same period, of the total development accomplished, 27,640 feet (or 62.2 per cent.) were in reef formation, the payable reef disclosures being:—

	Distance sampled. Feet.	Width. Inches.	Value. Dwt.
Main Reef Leader ..	10,320	23	21.9
South Reef	7,130	29	14.6

These figures are illuminating. They show that whereas the width of payable Main Reef Leader disclosed by the year's development was under 2ft., the stope width upon which ore reserves in respect of the Leader were calculated was no less than 5ft. Similarly, with the South Reef development: disclosures on this ore body showed an average width of 2ft. 5in., but the ore reserve calculation was based on a stope width of no less than 5ft. 2in.

The Crown Mines reduction and treatment plants were in operation in respect of 660 stamps and 26 tube mills for 285 days in the year. The ore received from the mine amounted to 2,399,831 tons, and 352 tons were taken from surface dumps, making a total of 2,400,183 tons. Of this, 222,383 tons, or 9.3 per cent., was sorted out as waste, and the value per ton of waste sorted out was .608 dwt. per ton.

These figures give one furiously to think. To anyone who realises the significance of the statistics which we have quoted above the moral is obvious, and the Crown Mines is typical of the rest of the Rand. Its report has been selected for no particular reason except that the company represents one of the big amalgamation projects of the Rand, and that it gives with a commendable frankness a host of data relative to its operations. We do not criticise the management of the company any more than we would criticise the management of any other proposition on the Rand. It is not so much a question of technical administration as it is a question of policy, and the figures given throw much light on Rand mining methods and their inefficiency, for which the class of labour employed has no doubt been largely responsible.

Stope Widths on the Far East Rand.

Not only on the Central Rand, but in the Far East Rand area as well, far too much waste rock has been mined and sent to the mill. Messrs. G. A. and H. S. Denny, who have a very thorough and intimate knowledge of Rand mining conditions, have recently been laying stress on this point in the *Mining Journal*, and in the course of an article they declare:—

On the Far East Rand, where 75 per cent. of the profits of the Rand are made, it is commonly supposed that because the stoping width average of the mines is in the neighbourhood of 60 inches this represents the average reef width. The following figures, which have been extracted from official statements, show that less than 50 per cent. of the rock mined is reef:

Company.	Reef widths. Inches.	Stope widths. Inches.	Pecentage of waste rock mined.
New Modderfontein .	14	65	78.5
Modder B	24	62	61.4
Government Areas ...	44	78	13.6
Van Ryn Deep	29	70	58.6
Brakpan	34	67	49.3
Springs	24	60	60.0
Modder Deep	41	78	47.5
Geduld ...	32	60	46.7
Mean. ..	30	67½	55.7

Negation of Efficiency.

The more one reflects on these figures and arguments, the more convinced does one become that it would be immensely to the advantage of Rand mining if the cost per ton calculation were abolished altogether, and if in its place was substituted a cost per ounce calculation. If this were employed the influence of the inclusion of waste rock or ultra-low grade reef on the profit and loss statement would be immediately and strikingly apparent. Under the cost per ton scheme it is not apparent. That voracious monster, the big mill, demands tonnage, and on many mines—most mines, in fact—it is just one evelasting scamble to keep the mill bins fed. The grade of ore sent to the mill is a secondary consideration. This is not efficiency; it is the negation of efficiency. If the Rand is to regain preeminence as a mining field these methods will have to be changed along lines which are indicated in this article and along other lines which we propose to discuss in succeeding issues of the *Journal*.

On the occasion of his going on six months' leave, Mr. J. Richardson, the popular manager of the Van Ryn Deep Mine, was last week presented with a gold watch subscribed for by employes on the property.

* * *

Mr. P. K. Horner, representing the board of the reconstructed B'Wana (M'Kubwa) Copper Company, passed through Johannesburg this week on a visit to the property of the company in Rhodesia. Mr. Walter Broadbridge has also gone to the B'Wana (M'Kubwa) Mine.

Progress of Hartebeestpoort Irrigation Works.

According to the latest report of the Director of Irrigation, the concrete coffer dams were completed in February, 1921. Borings taken on the upstream coffer dam to ascertain whether the apparent rock bottom reached was quite sound revealed the presence of holes filled with sand and blue mud. To neutralise the weakness due to these it was arranged to force grout through the boreholes, construct an apron above the coffer dam and also divert the river through a 6 ft. x 12 ft. tunnel, 240 ft. long. This tunnel had been well advanced by the 31st March. It is hoped that the foundations will be completed during the coming dry season. Additional to the petrol tractor already in use on the light railway, two electric locos were purchased, but owing to the increased demand for electrical power for construction plant these were withdrawn from service and two steam locos were secured from the Air Force authorities in March. Labour supplies prior to the 1st March were ample, but during March the preparations for heavy work to be carried out during the coming dry season called for a largely increased number of men and a shortage was experienced. 88 buildings for their accommodation had already been erected but tents had also to be provided for the extra numbers. In anticipation of rapid progress in concreting, an extension of the cement shed, to give a capacity of 36,000 bags instead of 20,000, was commenced in March. Until the 2nd March the works were under the charge of Mr. Cooper, M.I.C.E., but on his retirement at that date, Mr. F. W. Scott, B.A., M.E., Assoc.M.Inst.C.E., was appointed resident engineer.

DAVIS'S PIT WATER GAUGE.

Davis Made means Highest Grade.

The scale being behind the tubes, the division lines are seen across the whole width of each tube, rendering accurate reading possible.

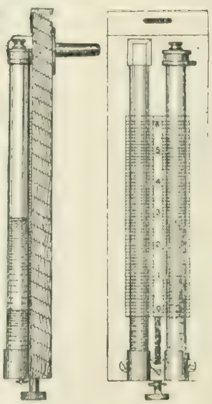
The tubes, instead of being the usual U shape, are composed of two separate pieces of straight boiler gauge glasses, sealed into a brass block; thus they can be readily and inexpensively repaired.

In the lower brass block a tap is inserted with a small hole, thus considerably contracting the connection between the tubes, and minimising the oscillation of the water column.

The tap may be turned off, thus registering the height of water column, and the Water Gauge brought to a good light to read.

There is an easy provision for filling and re-filling.

Bartle's can supply the Davis Pit Water Gauge from stock.



Made by JOHN DAVIS & SON, (DERBY) LTD., ENGLAND.

Agents for South Africa:

BARTLE & COMPANY, LTD.,
LOVEDAY HOUSE. Box 2466. Phone 3553. Wires "FAGGOT."
JOHANNESBURG.
Box 444 KIMBERLEY. Box 1228 DURBAN.

Dividend Prospects.

SOME INTERESTING FIGURES—APPROXIMATE FINANCIAL POSITIONS—GOVERNMENT AREAS, NEW MODDERS, VAN RYN DEEPS AND CROWN MINES.

There is considerable speculation as to what dividends are likely to be paid by Rand gold mining companies for the six months ended with June next. Under ordinary circumstances one can at this period of the year generally get a fair idea of the distributive abilities of the various companies by a study of quarterly reports and monthly output and profit figures. This year, however, the prolonged strike has involved all but five companies in losses, and it is as yet quite impossible to say what the result of the reorganisation of the industry will be in respect of the months of April, May and June.

The question of dividends is, however, of such supreme importance to investors that we give hereunder some figures which may be of assistance to those who are anxious to know what the approximate financial position of certain companies was at the end of March after the break-up of the strike and revolution and when more or less normal operations were resumed but with a considerable shortage of native labour. This week figures are submitted in respect of Government Areas, New Modder, Van Ryn Deep and Crown Mines. Publication ot these statements does not imply that any definite calculations are possible as to what dividends—if any—will be declared by these concerns for the first half of the year. The figures are merely given in accordance with the request of several readers.

Government Gold Mining Areas (State Mines).

Issued capital, £1,400,000. The total revenue, together with balance unappropriated at December 31st, 1920, of £467,536, amounted to £2,271,022 12s. 5d. This amount has been dealt with as follows: Government of the Union of South Africa share of profits, £896,210 14s. 7d.; Income tax, Provincial gold profits tax, miners' phthisis sanatorium, donations and depreciation, £31,284 15s. 8d.; dividends Nos. 8 and 9 of 25 per cent. and 30 per cent. respectively, £770,000; funds appropriated for capital expenditure to 31st December, 1921, in excess of working capital provided, £413,002 18s. 7d.; a total of £2,110,498 8s. 10d.; leaving a balance unappropriated at the end ot last year of £160,524 3s. 7d. During the three months ended March 31st, 1922, the company earned a profit of £52,911. At the end of last month the company had therefore £213,000 in hand, exclusive of funds appropriated for capital expenditure in excess of working capital provided.

New Modderfontein.

Issued capital, £1,400,000, in 2,800,000 shares of 10s. each. Financial year ends June 30th. The balance unappropriated at June 30th, 1921, represented by cash, investments and cash assets, less liabilities, was £306,848. In the quarter ended September 30th, 1921, the company earned a total profit of £440,800. In the quarter ended December 31st, 1921, the company earned a total profit of £404,815, and in the quarter ended March the total profit was £36,225. In each period expenditure was incurred on capital account, Government and Provincial taxes, and in respect of undermining rights annuity. In December dividend No. 31, absorbing £700,000, was declared.

Van Ryn Deep.

Issued capital, £1,196,892. At the end of last year there was an unappropriated balance of £198,217 15s. 10d. During the period of the strike and revolution in the first quarter of the year the company made a profit of £1,019. The financial position at the end of last month of this company was then that there was in hand approximately £200,000, less any amount that may have been expended on capital account during the quarter.

Crown Mines.

Capital issued, £940,104, in 1,880,208 shares of 10s. each. At December 31st, 1921, the company carried forward an unappropriated balance of £502,559 16s. 8d. The total loss incurred by the company during the first three months of the current year was just under one hundred thousand pounds, viz., working loss, £89,664; sundry expenditure, £10,123; total loss, £99,787. During the same period the company incurred expenditure as under: Capital expenditure, £5,930; undermining rights annuity, £7,476; premium on debentures redeemed, £638; debenture redemption, £21,250; and received a credit in respect of Bewaarplaats moneys of £1,909.

"Pay If You Can."

With reference to the question of payment of dividends by Witwatersrand gold mines in June next, the following paragraph is from our London contemporary, *The Mining World*: We would earnestly ask directors of mining companies to pay dividends where these are possible, even should the amounts carried forward be less than a year ago, or if part of the money required should have to be withdrawn from reserve funds. Investors are passing through a very bad period just now; they are oppressed by enormous taxation, and some at least of the concerns on which they depend for regular income have paid nothing for the last 12 months. Several companies this week announce the non-payment of dividends, which, in ordinary times, could have been paid with ease. There is such a thing as habit in paying dividends—ought we not rather to say in not paying them? We have frequently observed in the case of a preference dividend, for example, that when once "passed," the same operation is likely to be repeated. We do not, of course, urge directors to pay dividends irrespective of results, but have observed that those of several companies within the last few weeks, that might have made a small distribution, have failed to do so on the ground of "pursuing a cautious policy," the cautious policy meaning that the shareholders get nothing. If directors cannot pay, say, a shilling dividend, then let them pay one of sixpence, and, failing that, one of threepence. A very apposite remark was made by a shareholder at a recent mining meeting, that for the purpose of retaining the company's name in the dividend list it was well worth the while of directors to stretch a point, and particularly at a time of stress for shareholders such as the present. The public view with very different eyes the company that is in the dividend list and the company that has dropped out of it. There are companies we know that have "dropped out" without valid reason for doing so, and the effect has been bad upon share values.

ASBESTOS
PROPERTIES and FIBRE

ARE PURCHASED BY

AFRICAN ASBESTOS MINING CO., LTD.
P.O. Box 504, BULAWAYO
Telegrams: "Safasco," Bulawayo 'Phone No. 356

Johannesburg Correspondents :—HUGGINS & CO., LTD.
Consolidated Building —— JOHANNESBURG
Telegrams: "Turbros" P.O. Box 8108 'Phone 574

RYLANDS' STEEL WIRE ROPES

MANUFACTURED BY:
RYLANDS BROTHERS, LTD.,
WARRINGTON, ENGLAND.

SOLE REPRESENTATIVES FOR UNION OF SOUTH AFRICA:—
ARMSTRONGS & MAIN, LTD.,
84, Marshall Street,
JOHANNESBURG.
P.O. BOX 5988. 'PHONE 5203.

LARGE STOCKS ON HAND.

SPECIALISTS ..

IN THE MANUFACTURE AND DESIGN OF
STRUCTURAL STEELWORK.

ARMSTRONGS & MAIN, LTD.,
GENERAL AND CONSTRUCTIONAL
.. ENGINEERS, ..
84, Marshall Street,
JOHANNESBURG.

P.O. BOX 5988. TELEPHONE 5203.

The Sabie Area.

PILGRIMS REST GOLD FIELDS—A FIELD OF MANY ATTRACTIONS BUT HAMPERED BY GOVERNMENT RESTRICTIONS.

(From a Special Correspondent).

To those who know the Sabie area of the Pilgrims Rest goldfields, it presents a very favourable picture of what an outside goldfield should be. Of one particular feature, very pertinent to the recent trouble on the Rand, special mention may be made.

The "*status quo*" conditions have never existed on this field, but just as in Rhodesia the number of natives appointed to a white man is that which he can economically control. The result (it should appeal to the perfervid exponents of the "colour bar") is that the white man's prestige is considerably enhanced. He immediately becomes an officer while his leading native acts as a "non-com." and prevents the closer contact which so frequently lowers the status of the white man. Curious to say, this does not tend to a very skilled class of native, and there is probably not a native on these fields who thinks that he could cope with the duties of his white supervisor.

In the Beautiful Sabie Mining Area: A Famous Waterfall.

These conditions at the same time allow of much lower grades and widths being worked, one hundred inch-pennyweights being considered a nice payable proposition; much of what is mentioned as unpayable development in Rand companies' reports would be considered a Bonanza on the Sabie fields.

Phthisis is, of course, not engendered on these fields, and we are glad to say the fields supply a small outlet for the unfortunate sufferers from Rand conditions. The only drawback to the Sabie fields is their present limited extent.

Extension of Mining Activities Desirable.

Although the gold horizons have been known and proved, and gold actually profitably produced on adjacent farms, the feeble efforts of the Mines Department to get further land proclaimed meet with no success. Section 123 of the Precious and Base Metals Act expressly says: "Whenever it shall appear expedient in the public interest, the Governor-General may by Proclamation in the *Government Gazette* declare any land adjoining, enclosed by, or situate in the neighbourhood of proclaimed land, to be portion of a proclaimed field."

After all, even in the Act of 1908 it is stated that the right to mine for precious metals belongs to the State, and with our practically republican constitution the public is the State. It is one of the chief duties of the public servants of the Mines Department to give the public the opportunity to exercise that right, and the Act of 1908 gives them the legal machinery to do so, the rights of the landowner being protected or compensated for in various ways.

Hopes were raised some time ago that a farm very favourably situated and on which payable gold had been produced would be proclaimed and that a definite policy of proclaiming farms at reasonable intervals would be instituted. This hope has now been dashed to the ground, and the public is informed that not the most indefinite promise can be given of when this farm will be proclaimed.

Suggested Mottos.

Sometimes one wonders if on the corner stone of the Union Buildings there was engraven that text, "To him that hath shall be given, and from him that hath not shall be taken even that which he hath."

Might we suggest the following motto over the portals of the Mines Department, Pretoria: "*Damnati ad Metalla,*" which no doubt a non-classical but discriminating public would translate "Damnation to the Mines."

Employment on the East Rand.

Official figures are now available reflecting the exact amount of unemployment on the mines of the East Rand. At April 10 the number of men employed on eight of the leading East Rand mines was 68 per cent. of the total number employed at December 31. The exact figures were:

	Dec. 31, 1921.	Mar. 31, 1922.	April 10, 1922.
E.R.P.M.	1,248	737	742
Geldenhuis Deep ...	464	355	347
Knight Central ...	244	189	182
New Primrose ...	142	124	131
Rose Deep	494	360	368
Simmer and Jack ...	565	382	386
Witwatersrand ...	339	245	250
Wit. Deep	323	209	215

MAGNOLIA
ANTIFRICTION METAL
"FLOWER" BRAND.
TRADE MARK
HAS THE LOWEST CO-EFFICIENT OF FRICTION.
KEEPS down the bill for lubricants, making BEARINGS smooth as glass and keeping them COOL under heaviest pressures and highest speeds.
Manufactured and Sold By—
THE MAGNOLIA ANTI-FRICTION
METAL CO. OF GREAT BRITAIN, LIMITED.
49, QUEEN VICTORIA STREET, LONDON, E.C.
Agents for South Africa: FRASER & CHALMERS, Ltd., Johannesburg, Bulawayo and Salisbury

CLIMAX DRILLS

A Speed Contest and the Joburg III.

IN one of the many Mines where Climax Drills are in use the Joburg III was doing good work.

But somebody came along with another drill, and claimed for it that it would work 50% faster than any drill in the mine.

So it was set to work alongside the Joburg III . . . . and this is what happened:—

Somebody's Drill did 6 holes in 5 hours.

The Joburg III did 7 holes in 4½ hours.

The conditions were identical—but Joburg III was a *better* drill.

It's all in the build of the Drill. *Climax Sam.*

Save your Bills—
Climax Drills
British —— from
Handle to Steel Point

Joburg III is a Cradle Hammer Drill for wet or dry drilling, with automatic rotation and screw feed. Fitted with the famous little spool type valve.

THE CLIMAX ROCK DRILL & ENGINEERING WORKS LTD
4 Broad Street Place London E.C.2. Works:- CarnBrea. Cornwall.

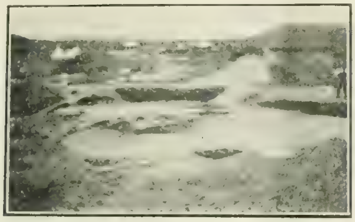
(INCORPORATED IN GREAT BRITAIN)

Local Address: **49, STELLA BUILDINGS,**
Corner Rissik and New Streets, —— JOHANNESBURG.
P.O. BOX 4256. —— Telegrams: "THUMBSCREW." —— Telephone 2794.

Parys Diamond Diggings.

SOME GOOD FINDS.

"Parys," on the Vaal River, 60 odd miles south-west of Johannesburg, has long been famous as a health and pleasure resort, but just at present nature has added a further attraction in the way of diamond diggings, east and west of the town. So far, in about four months, some eight or nine thousand pounds' worth of diamonds have been found. One stone of 46 carats, with a flaw in it, was sold for £640. Others have been found as follows: 26, 22, 16, and 10½ carats, down to fine stuff. The value of these has been anywhere between £12 and £22 a carat.



Diamond diggers' camp and workings on banks of Vaal River, six miles east of Parys.

Digging on the Town Lands is now forbidden, so speculators have betaken themselves to the "Vredefort-granite-boss," as shown on all maps, and are letting out the land thereon. To what extent this is diamond bearing remains to be proved, but from my observation, I should say possibly diamonds may be distributed all over it, here and there. At one time our schistose age covered it, and is now worn down, as can be seen by the wash which carries the débris thereof, and nothing else. Quartz, chalcedony, and agate pebbles are a feature, also corundum in appreciable quantity.

Diamond digging on banks of Vaal River, six miles east of Parys, with Vaal River marked by long line of trees in the distance.

It is not a poor man's diggings at present, and Parys rather trusts it may not be for years to come. The overburden is very thick away from the river, and will require more than the ordinary man's means to tackle it.

SCOTT ALEXANDER, "Rand Stratigraphist."

Attention is drawn to the advertisement in another column offering, on lease, the ground floor offices of a new building in course of erection in the vicinity of the new Chamber of Mines and Stock Exchange building.

Future of S.A. Mining.

DR. E. T. MELLOR'S VIEWS ON GOLD AND COAL.

Dr. E. T. Mellor, the well-known geologist, contributes to *Economic Geology* a brief review of conditions affecting mining in this country, and he concludes with a reference to the life of the Rand and a note on the future of the coal mining industry. Dr. Mellor writes:—"That the price of gold will sink to pre-War level does not appear likely for many years to come, but no one doubts that the premium will be gradually reduced, and this will mean the closing down of many mines, unless means is found of compensating for the fall in gold value by reducing the cost of production to something like the former level. The gradual fall in the cost of materials will probably afford a little assistance in bringing this about, but will not materially affect the position. The real key to the situation is generally regarded as lying in some modification of existing labour conditions, and the solution of the complicated questions thus involved forms perhaps the most interesting problem before the South African mining industry to-day.

Life of the Rand.

"The question is constantly asked, 'What is the life of the Rand?' The answer depends largely on the conditions of working. With working costs at their present level, it is comparatively short, but with a decrease on the demands made upon it for taxation purposes and the relaxation of labour restrictions, its life may be almost indefinitely prolonged.

Coal Mining Progress.

"One of the most striking features in connection with the South African mining industry during the past two or three years has been the activity displayed in the development of the coal resources of the country, especially in the Transvaal. The conditions induced by the World War brought South Africa into some prominence as a source of bunker and export coal, which, though not perhaps equal to the best British coal, was still a much appreciated and efficient fuel. After a long period of steady, but slow, progress, depending mainly on increasing home consumption, during which the standard of the coal turned out by the collieries has been steadily raised, while but little has been added to our definite knowledge of the coal resources of the country, a period of very active prospecting and development work has recently increased our information enormously in this latter direction. Boring on a more extensive scale than ever previously undertaken has added large areas of coal-bearing country to our known reserves of coal, of the highest South African grades, which were previously rather generally supposed to be confined to comparatively restricted districts.

"With the increasing interest which is being taken in fuel questions, and the developments which are taking place in coal products generally, the large extensions of existing coal fields which have recently been proved provide perhaps the biggest field for new enterprises in connection with the mining industry in South Africa to-day. At the same time, the additions to our knowledge of the somewhat unusual conditions under which some of the South African coals were laid down will probably prove of great interest from a geological point of view."

Box 3807. **Tel. 5892.**

WRIGHT'S ROPES

H. ALERS HANKEY - - - Sole Agent.

The Year with the Crown Mines.

DISASTROUS STRIKES CAUSE HIGHER WORKING COSTS AND SUBSTANTIAL REDUCTION IN PROFITS.

The annual report of the Crown Mines, Ltd., to be presented at the meeting on June 1st, reflects a very troubled year. A comparison of the results achieved with those of the preceding year shows that there was a decrease in the tonnage milled of 24,000 tons. The yield showed a decline of ·196 dwt. per ton which, with the lower price obtained for the gold produced, caused a decrease in the recovery value of 2s. 6d. per ton milled. On the other hand, working costs were 1s. 3d. per ton higher, the operations for the year resulting in a working profit of £672,030 8s. 9d., a reduction of £421,305 9s. 4d., or 3s. 9d. per ton milled, as compared with the previous year. The working of the mine during the year was considerably hampered through the unreasonable and harassing tactics of some of the labour unions, which resulted in widespread inefficiency and increased costs. The men gained nothing by these two strikes, which, however, inflicted substantial losses on the Company. The ore reserve was re-estimated and re-valued at 31st December, 1921, and shows an increase of 379,500 tons with a slightly lower value of .3 dwt. per ton.

The consulting engineer's report has the following, *inter alia*:—The following figures compare some of the leading features of the last two years: Tonnage milled, 1920, 2,201,000, 1921, 2,177,000; yield per ton milled, 1920, 6.103 dwts., 1921, 5.907 dwts.; value of same at standard price of gold, 1920, 25s. 7.6d.; 1921, 24s. 9.7d.; revenue on above basis, 1920, £2,820,741, 1921, £2,700,625; additional revenue due to difference between standard value and price actually obtained, 1920, £883,733, 1921, £688,123; total revenue, £3,704,474, 1921, £3,388,748; total revenue per ton milled, 1920, 33s. 7.9d., 1921, 31s. 1.6d.; working cost per ton milled, 1920, 23s. 8.7d., 1921, 24s. 11.5d.; working profit per ton milled 1920, 9s. 11.2d., 1921, 6s. 2.1d.; total working profit, 1920, £1,093,336, 1921, £672,030; ore reserves, 1920, 8,131,700 tons, 1921, 8,511,200 tons; ore reserve (value), 1920, 6.4 dwt., 1921, 6.1 dwt. The striking feature of the above fiures for the year 1921 is that this huge mining property, milling 2,177,000 tons, and yielding 643,005 fine ozs. of gold, was entirely dependent for its profit on the so-called premium on gold. The revenue on the standard gold basis was £2,700,625, whilst the cost of production, apart from redemption and interest on debentures, capital expenditure and Government taxes, was £2,716,718, and had it not been for the enhanced value obtained for gold, the year's operations would have resulted in a working loss of £16,093. It will be obvious, therefore, that since gold has fallen in value to a figure below the lowest obtained at any time last year, very strong measures must be taken to enable this important property to pay its way, and to give a fair return on the large sum of money invested in it. The following figures, comparing the expenditure of the years 1915 and 1921, are illuminating:—White wages, excluding leave and sick pay: 1915, £489,466, or 3s. 11d. per ton milled; 1921, £824,587, or 7s. 6·9d. per ton milled. Coloured wages: 1915, £459,612, or 3s. 8·2d. per ton milled; 1921, £442,809, or 4s. 0·8d. per ton milled. Stores and materials: 1915: £656,293, or 5s. 3·1d. per ton milled; 1921, £915,961, or 8s. 5·0d. per ton milled. Other mine costs: 1915, £369,502, or 2s. 11·5d. per ton milled; 1921, £510,389, or 4s. 8·3d. per ton milled. Head office expenditure: 1915, £42,918, or 0s. 4·1d. per ton milled; 1921, £22,972, or 0s. 2·5d. per ton milled. Total working expenditure: 1915, £2,017,791, or 16s. 1·9d. per ton milled; 1921, £2,716,718, or 24s. 11·5d. per ton milled. Tonnage milled: 1915, 2,497,000 tons; 1921, 2,177,000 tons. Yield per ton milled: 1915, 6·112 dwt.; 1921, 5·907 dwt. The continuity of the year's operations was hampered by two strikes which occurred in the months of February and November respectively. No advantages were gained by the malcontents in either case and they merely succeeded in curtailing the scope of the company's operations. The average number of natives employed was 14,000 out of a complement of 19,000. It was possible to slightly extend development operations, and fair progress was made with the southern development work. The completion of two subsidiary inclines between the 16th and 19th levels in the western section of the mine provided a foundation for the more rapid development of this area, and here results in the South Reef were unexpectedly favourable. The total tonnage of payable ore developed was 2,250,400 tons of an estimated value of 6·3 dwt. per ton, this being 79·1 per cent. of the total ore developed for the year. In the southern deeper area, it was not possible to strictly adhere to time table laid down, and there was some delay, more particularly in connection with the development programme from No. 5 A shaft. Towards the close of the year cross-cutting to the reefs had commenced on a number of levels and good progress can be looked for in the current year. Further to the south, beyond the dyke on the same line of section, all preparations for sinking No. 14 A sub-vertical shaft below the 19th level were completed—the work done here was of a particularly high-class character—and sinking carried on to a depth of 414 feet below the 19th level. In the western section, south of the large dyke, the preparatory work for sinking Nos. 7A and 15A vertical shafts made very good headway. Attention is invited to the cross sections on the plan of the mine workings accompanying the report. From these a better understanding may be had of the extent of the preliminary work necessary for the development of the deeper portions of the mine. The available reserve, compared with the preceding year shows an increase of 360,000 tons, while its value is fractionally lower. The capital expenditure commitments for 1922 are estimated at approximately £100,000, the principal items being on account of the sinking of Nos. 14A and 15A deep level shafts, the completion of arrangements at No. 12 shaft, and additional pumping plant. Operations for the current year are bound to be seriously affected by the strike, and operations on a full-scale will take time to reorgnaise as at the time of writing the labour force has been depleted by 3,100 natives.

The Municipality of Grahamstown is calling for tenders for the supply and erection of a complete electric power plant.

JUST PUBLISHED.

PROVISIONAL

Geological Map of Southern Rhodesia.

On one sheet measuring 33 by 35 inches.

Scale 1 : 1000000, *or about* 16 *miles to one inch.*

Showing the geological formations in 12 colours, sites of the principal mines, railways, rivers, etc. Compiled by the Geological Survey of Southern Rhodesia, and sold at the Mining Commissioner's Offices in Bulawayo, Gatooma, Gwelo, Salisbury, Umtali and Victoria.

Price £1 (postage to the Union 1/1 extra).

City Deep.

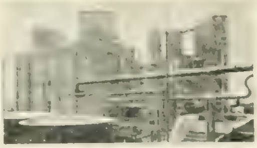
RECORD IN TONNAGE AND PROFITS.

Some particulars of the results of last year's operations at the City Deep appeared in our last issue. The following are extracts from the reports of the consulting engineer and the manager. Mr. A. J. Brett, the consulting engineer, writes: The following tabulation summarises the salient features of the work of the past three years: Tonnage milled, 1919 617,800, 1920 862,500, 1921 995,100, working costs per ton, 1919 27s. 9d, 1920 30s. 2d., 1921 29s. 11d.; revenue per ton with gold at 84s. per oz., 1919 38s. 3d., 1920 34s. 3d., 1921 35s. 4d.; working profit per ton with gold at 84s. per oz., 1919 10s. 6d., 1920 4s. 1d., 1921 5s. 5d.; working profit with gold at 84s. per oz., 1919 £324,572, 1920 £173,734, 1921 £270,140; additional revenue represented by difference between 84s. per oz. and actual price realised, 1919 £133,115, 1920 £475,614, 1921 £441,376, total working profit 1919 £457,687, 1920 £649,348, 1921 £711,516; development footage, 1919 17,267, 1920 15,651, 1921 25,772; ore in reserve (tons), 1919 3,418,050, 1920 3,099,200, 1921 2,428,300; average value of ore reserve (dwt. per ton), 1919 9·4, 1920 9·0, 1921 8·8; average strength of coloured labour force, 1919 4,465, 1920 7,011, 1921 8,286. The profit earned during the year constitutes a record in the history of the company, a result, however, only achieved after making use of the additional native labour supply acquired with the City and Suburban mine to crush a tonnage far in excess of anything previously accomplished. Although the increase in the price of gold accounted for less of the profit than in the preceding year, it nevertheless still accounted for 62 per cent. of the total profit earned. The large increase in operating costs within recent years is realised when it is stated that, after deducting for development charges, a total expenditure of £495,000 during the year 1912 returned the company a profit of £282,000, whereas during 1921, when an equivalent grade of ore was mined, an expenditure of £1,340,000 resulted in a profit of only £270,000 at the normal price of gold. Development was vigorously prosecuted and the footage accomplished was considerably greater than for several years past. It is satisfactory to note that in spite of the much larger amount of money spent on development, working costs were 3d. per ton lower. The rate of sorting was slightly higher than the previous year and there was an increase of ·3 dwt. in the yield per ton. The tonnage treated increased by over 130,000 tons, due to the fact that a satisfactory supply of native labour was maintained throughout the year, and that a considerable increase in efficiency was obtained from the use of jackhammers. The attention given to this class of work and the results obtained were greatly to the credit of the management. Operations were suspended for nine days during February owing to a strike of white employees, while work was interrupted in the upper levels of the mine at various times owing to movements of ground. Sandfilling on a fairly extended scale is being carried on with a view to controlling these movements as far as possible. The central pumping scheme previously referred to has been abandoned, it having been decided to increase the capacity of the main City Deep pumping plant instead. The ore in reserve at the end of the financial year was estimated at 2,428,300 tons with an average value of 8·8 dwt. per ton, of which 2,055,400 tons at 8·9 dwt. are available and 372,900 tons at 8·3 dwt. are safety pillars and unavailable at present. The decline in tonnage is mainly due to the fact that the ore mined from the reserves during the year was considerably in excess of that replaced by development, notwithstanding the great increase in the footage accomplished. It should be explained that an abnormal amount of deadwork, nearly 8,000 feet, was carried out during the year, *i.e.*, main haulages, cross-cuts, etc., and while this work is essential and most important no ore is developed thereby. Further, in certain drives which are carried below the reef, the cross-cuts had not exposed the reef over the entire distance driven in time for the ore reserve estimate. In view of the decreased selling price of gold and the fact that working costs are not likely to decrease as rapidly, the pay limit taken for estimating the payable ore reserves has been increased, while an increase in the stope widths used for the estimate partly accounts for the decrease in value. A second hoist to serve No. 2 incline shaft was put into commission towards the end of April, and the position in this section was greatly relieved as a result. The main haulage between Nos. 1 and 2 shafts on the 16th level was connected during the month of October. The bottom of No. 2 incline shaft was dewatered during the early part of the year and sinking was resumed in May. At the end of the year the shaft bottom was one foot below the horizon of the 22nd level, an advance of 469 feet for the year. Owing to various disabilities no sinking was done in the South shaft during January or February, but operations were resumed in March and carried on uninterruptedly until the horizon of the 17th level, which marks the limit of the first stage of this shaft, was reached in December at a depth of 4,470 feet, the footage accomplished during the year being 1,554 feet. Sinking operations were then suspended and a cross-cut was commenced from the shaft bottom to connect with the main heading from No. 2 incline; at the end of the year only a small footage remained to effect the connection. The City and Suburban compound is in a bad state of repair, and a considerable expenditure would be necessary to put it in a satisfactory condition. Further, it is not feasible to transport the native employees living in this compound to the City Deep shafts, and the cost of operating the old City and Suburban Shaft for the sole purpose of conveying these natives to the underground workings is approximately £2,000 per month. It has accordingly been decided to proceed immediately with the erection of a new compound in a central position from which all the working shafts will be accessible.

The Manager's Report.

Mr. P. W. Sherwell, the manager, writes, *inter alia*: The results for the year constitute a record both as regards tonnage and profits. This is chiefly due to an ample native labour supply. The increased yield of ·26 dwt. on the previous year was offset by the fall in the price of gold, the net result being a decrease in revenue of 1s. 1d. per ton milled. Working costs showed a reduction of 3d per ton milled as compared with the previous year, in spite of a miners' strike in February and an increase of 10,121 feet (exclusive of shafts) in the amount of development work accomplished. The development costs for the year were 3s 0·5d. per ton milled as against 2s. 6·3d. the previous year. Working costs at 27s. 8·3d. per ton milled for the last quarter showed an appreciable reduction on the results for the first part of the year. Profits were seriously affected by the miners' strike in February, the mill being hung up for nine days. The loss in profit, due to decreased tonnage and general disorganisation of underground work, was in the neighbourhood of £50,000. The new man-hoist at No. 2 incline shaft was put into commission at the end of April, and the hoisting capacity at this shaft is now sufficient for all requirements. In addition, we are now in a position to handle a large amount of unpayable development rock in this area of the mine without sending it to the mill. This shaft has only another 200 feet farther to sink to reach its final depth. The new hoist at No. 1 incline shaft is almost completed, and will be in commission soon after the present strike is over. Preparations are in hand for sinking this shaft as soon as the hoist is in commission. 137,771 tons of sand were lowered into the mine during the year. Owing to heavy movements of ground in the City and Suburban incline shaft towards the end of the year, this was closed down for all purposes except the reclamation of pipes, rails, etc.

BALL FEED PUMP



SIMON CARVES BY PRODUCTS PLANT

BABCOCK WILCOX BOILER

VINCENT & PULLAR
ENGINEERS
CLUB ARCADE, DURBAN

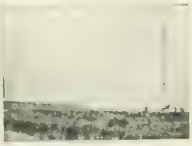
Representing in Natal :—
Messrs. REUNERT & LENZ, LTD
" RICE, WILSON & HERD
" S.A. GENERAL ELECTRIC CO., LTD

We Specialize in
POWER ENGINEERING

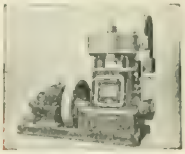
OUR AGENCIES COVER THE
BEST
AND MOST
Important
Manufacturers
in each class of machinery used on collieries

WE WILL DRAW UP
Lay-out Plans and Specifications and Quote to supply and erect COMPLETE INSTALLATIONS

SEND YOUR ENQUIRIES TO
VINCENT & PULLAR
Club Arcade
DURBAN
P.O. Box 1146 Phone 1801
Telegrams "ELECTRICAL"

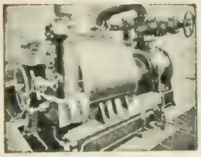


CALLENDER'S KAY POLES

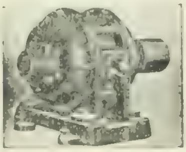


BELLISS ENGINE SET

PEARN MINE PUMP

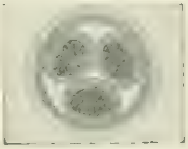


BELLISS TURBINE.



G.E. MOTORS.

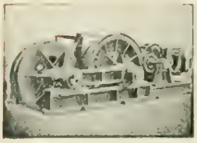
BELLISS COMPRESSOR.



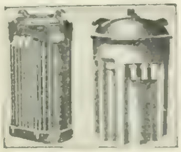
CALLENDER'S CABLES.

SIROCCO MINE FAN.

G.E. LOCOMOTIVES



LIDGERWOOD HAULAGE



G.E. TRANSFORMERS

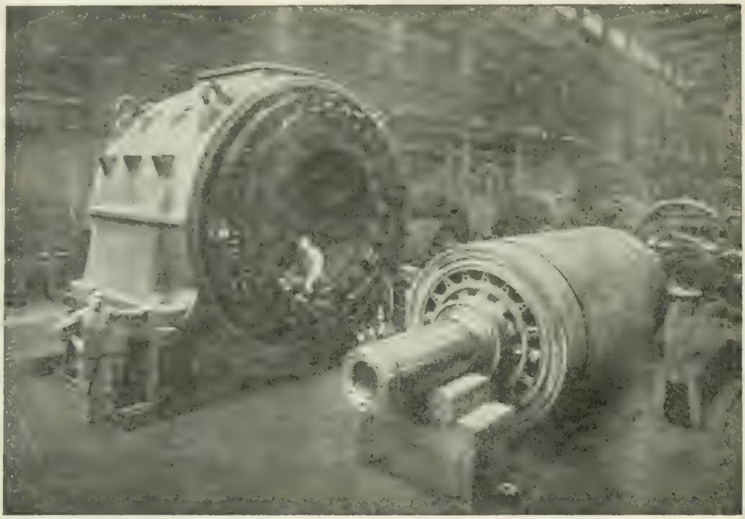
DIAMOND COAL CUTTER

SULZER MINE PUMP.

E.R.P.M. Position.

A CRITICAL SITUATION REVIEWED.

Some facts from the annual report of the E.R.P.M. were given in our last issue. These may be supplemented by the following from the annual report of the consulting engineer. Mr. A. J. Brett writes: The following tabulation summarises the salient features of the work of the past three years: Tonnage milled, 1919 1,409,500, 1920 1,460,000, 1921 1,506,000; working costs per ton, 1919 23s. 6d., 1920 27s. 7d., 1921 26s. 8d.; revenue per ton with gold at 84s. per oz., 1919 25s. 1d., 1920 23s., 1921 22s. 1d.; working profit per ton with gold at 84s. per oz., 1919 1s. 7d, 1920 (loss) 4s. 7d., 1921 (loss) 4s. 7d.; working profit with gold at 84s. per oz., 1919 £109,203, 1920 (loss) £334,459, 1921 (loss) £342,239; additional revenue represented by difference between 84s. per oz. and actual price realised, 1919 £194,613, 1920 £527,453, 1921 £420,497; total working profit, 1919 £303,816, 1920 £192,994, 1921 £78,258; development footage, 1919 13,912, 1920 18,566, 1921 18,816; ore in reserve (tons), 1919 2,634,350, 1920 2,410,850, 1921 1,946,650; average value of ore reserve (dwt. per ton), 1919 6·3, 1920 6·1, 1921 6·7; average strength of coloured labour force, 1919 9,839, 1920 11,225, 1921 12,051. The company crushed a total of 1,506,000 tons for a working profit of £78,258, which was insufficient to meet the liabilities which have to be discharged beyond those incurred directly in operating the mine. Working costs were 11d. per ton lower than those of the preceding year, but the yield fell by ·223 dwt., while the rate of sorting also declined somewhat. The main factor in the considerable reduction in profit, however, was the fall in the price of gold. The position during the last three months of the year, when every effort had been made to reduce costs in all directions, was far from reassuring, as with the heavy decline in the price of the precious metal, it was only just possible to cover actual mining expenses. Development operations were continued as vigorously as circumstances would permit in the more promising areas of the mine, particularly in that section covering a distance of 7,000 feet along the strike and stretching from the western boundary of the property to the Angelo Deep East shaft. A considerable amount of work was also carried out in attempting to find an extension of the payable zone in the Cason Cinderella section. Very little work was done in the 5,000 feet stretch comprising the Hercules section, between the Angelo Deep East shaft and the Cinderella Consolidated boundary as, apart from financial considerations, the results obtained in the deepest workings in this area have been most discouraging. The district first referred to, lying between the western boundary of the property and the Angelo Deep East shaft, has for some considerable time offered the best prospect of yielding a fair proportion of payable ore, and the result of the year's exploratory work in this limited area must be considered as reasonably satisfactory. Two incline shafts serve this ground in depth, the Farrar Secondary and the Angelo Auxiliary (West), both of which were deepened during the period under review. The Farrar Secondary was sunk 508 feet to a point of 280 feet below the 30th level, while the Angelo Auxiliary was deepened 202 feet, the shaft bottom being 64 feet below the horizon of the 30th level at the end of the year. No insuperable water difficulties were encountered in either of these inclines, and as far as the Farrar Secondary is concerned none are expected. The position is somewhat different as regards the Angelo Auxiliary, but should this shaft encounter an unusual quantity of water it is hoped to drain the area by tapping the water in the 33rd level west Comet Deep drive. The most important reef disclosures in this section were those obtained on the 28th and 29th levels, Driefontein and Angelo, and in the 31st and 33rd west drives, Comet Deep, all of which opened up a fair tonnage of profitable ore at a value slightly higher than the average of the reserves. The 31st and 33rd drives are particularly interesting as they are traversing the area between the two Angelo Deep shafts, which was in the main quite unpayable on the levels immediately above. The good values obtained on these levels during the year may indicate an extension of the western zone of payability, which would be a matter of considerable importance to the company. With regard to the Cason-Cinderella section, the results were far from satisfactory. The incline shaft was deepened a further 91 feet to a point 91 feet below the 29th level, and several of the eastern drives were extended beyond the previously known zone of payability. In no case, however, were satisfactory values disclosed over any considerable distance, and the possibilities of finding further large bodies of ore in this neighbourhood do not appear hopeful at present. A certain quantity of ore was found by internal development in large blocks higher up in the mine, but it is to the virgin areas at the bottom of the mine that attention must primarily be paid for the replenishment of the rapidly diminishing ore reserves. The ore in reserve at the end of the year was estimated to be as follows: 1,946,650 tons at an average value of 6·7 dwt. per ton. Of this total 1,683,760 tons at an average value of 6·6 dwt. are classified as available, while 262,890 tons at 7·3 dwt. are in the form of shaft and safety pillars, and, for the most part, unavailable at present. The quantity shows a decline of 464,200 tons, while the average value has increased by ·6 dwt. This result is due in some measure to the necessity of eliminating a considerable tonnage of low grade rock owing to an alteration in the pay limit on which the estimate was based, but in addition the ore developed was quite insufficient in quantity to replace that mined, although it was of higher average grade. In addition to the ore reserve quoted above, the mine contains a considerable tonnage in various fully developed and available areas, which would become profitable under more favourable conditions than exist at present. The improvement in average value of the ore reserves does not foreshadow an increase in the yield, as it is imperative that the developed reserves be conserved as carefully as possible while the maximum tonnage is drawn from reclamation points, which supply ore of a grade considerably lower than that of the ore reserves, but from which the tonnage is relatively cheap to obtain. A larger hoist was put into commission in the Cason-Cinderella incline early in the year, in order to increase the tonnage from this section to compensate for the loss of certain other sources of supply. A useful tonnage of profitable rock was drawn from the Ginsberg section during the year. To sum up the general position, the development work accomplished during the year was far from sufficient to maintain the ore reserve position, but some encourageing features were disclosed. The yield obtainable from the mine is so low that expenditure has to be carefully regulated, and unfortunately development is one of the first items to suffer when the margin of profit becomes dangerously small. In view of the great extent of the mine workings and scattered nature of the working places, the possibility of reducing standing charges by eliminating certain old sections of the mine is under consideration. It is felt that some advantage might result from concentrating underground operations as far as practicable, and possibly crushing on a somewhat reduced scale. In this connection it must be remembered that pumping charges are practically irreducible whatever the scale of mining operations, while the number of operatives required for certain surface works, such as the power plant, cannot be cut down in proportion to the tonnage. The problem is a very intricate one and requires the closest investigation before any course of action is decided upon. The position remains, however, that it cost the company 101s. 3d. to produce an ounce of gold during the year just completed, and with gold at present below this figure and no substantial improvement in the yield possible, it is obvious that a considerable reduction in operating costs will have to be effected if the company is to continue mining operations on any scale whatever, apart from any attempt to retrieve the position by increasing its development programme.



ONE OF OUR 60,000 KVA MACHINES IN THE SHOPS.

We have Designs complete for a line of 160,000 KVA Units.

This will give you some idea of our capabilities.

BRANCH OFFICE FOR SOUTH AFRICA:

C. KLEUDGEN, LTD.,

Corner of LOVEDAY and MARSHALL STREETS, JOHANNESBURG.

P.O. Box 1164. Telegrams: "KLEUDCO." Telephone Central 5435.

MILLAR DENNIS

ORIGINAL MAKERS OF

"BRADFORD INVERTED"

PLUG COCKS.

SOLE AGENTS:

GEO. CRADOCK

—AND CO. (S.A.), LTD.—

75-77, CULLINAN BUILDINGS.

P.O. Box 316. Telephone 539.

Tel. Add.: "ROPES."

JOHANNESBURG.

ROBINS CONVEYING BELT COMPANY

NEW YORK

Engineers, Founders, Machinists

Design, Manufacture, and Erection of

BELT CONVEYORS
BUCKET ELEVATORS
COAL, COKE, AND ORE SCREENS
COAL AND COKE CRUSHERS
SKIP HOISTS
COAL AND ORE BRIDGE CRANES
ORE-BEDDING SYSTEMS
SHIP LOADING AND UNLOADING TOWERS
COAL AND ASH HANDLING EQUIPMENT FOR POWER PLANTS
COAL HANDLING AND SCREENING EQUIPMENT FOR COLLIERIES
AND MANY OTHER TYPES OF MATERIAL-HANDLING EQUIPMENT.

Branch for South Africa:

Robins Conveyors (S.A.), Ltd.,

P.O. Box 4736, 'Phone 4182, JOHANNESBURG.

The South African Mining and Engineering Journal.

HEAD OFFICE: 176-180 Stock Exchange Buildings (2nd Floor), Fox Street, JOHANNESBURG, Union of South Africa.

Telephone **913.** P.O. Boxes **963** and **4573.**

Cables and Telegraphic Address: "MINING JOURNAL"

ANNUAL SUBSCRIPTION RATES: Oversea, £2; Union of South Africa and Rhodesia, £1 10s.; Local Delivery (Town only), £1 6s., payable in advance.

AGENTS FOR GREAT BRITAIN AND AMERICA: Argus South African Newspapers, Ltd., Byron House, 82-85, Fleet Street, London, E.C. 4.

Copies of this Journal are obtainable at all Branches and Agencies of the Central News Agency, Ltd., at all News Agents and Railway Bookstalls throughout South Africa, and at the London Agency as above.

CONTENTS.

PAGE
Rand Mining Methods Discussed ... 1151
Dividend Prospects ... 1155
The Sabie Area ... 1157
Parys Diamond Diggings ... 1159
Future of S.A. Mining ... 1159
The Year with the Crown Mines ... 1160
City Deep ... 1161
E.R.P.M. Position ... 1163

Editorial:

The W.N.L.A. ... 1165
The Union, Rhodesia and Native Labour ... 1165
Busy Man's Page ... 1169
Finance and Information for Investors ... 1170

Engineering Section:

The Engineer and the Future of South Africa ... 1171
Hysteretic Repulsion ... 1172
Bricks from Slimes ... 1173
Share Market ... 1175

Rhodesian Section:

Mulingwane Minerals ... 1177
Gwanda District ... 1177
Clack—Foundries ... 1177

Trade and Industries Section:

The Week in the Mining Material and Engineering Trades ... 1179

EDITORIAL.

THE W.N.L.A.

The Witwatersrand Native Labour Association—the somewhat inappropriately named organisation that handles the recruiting for the mines of natives from Portuguese territory—held its annual meeting this week, and several matters of general interest were dealt with in the chairman's speech. Of these the most important were: (1) The actual recruiting results for the past year; (2) the denunciation of the Transvaal-Mozambique Convention by the Union Government; and (3) the effects of the recent strike. As regards the year 1921, the number of natives obtained for the mines by the Association was 45,000, which the chairman, Mr. H. O. Buckle, was at pains to explain represented the normal output of the recruiting areas in a normal year. To people who are prone to regard Mozambique as an inexhaustible reservoir of black labour, the chairman's estimates of the limited amount of able-bodied suitable natives available for work on the mines will come as a surprise. His net conclusion is that it is not possible to expect any considerable increase in the number of natives for the mines from Portuguese territory south of latitude 22 degrees south. In fact the danger is that the increasing demand for native labour in the territory itself will tend to diminish the available supply. On the subject of the Convention between the Transvaal and Mozambique the chairman's remarks were naturally of the briefest description, since the treaty is now in the melting pot. He did, however, in passing, pay tribute to the "absolutely vital importance of the Portuguese labour supply to the mining industry, equalled, it is true, by the similarly vital importance to the financial position of the Province of Mozambique that its natives should be able to participate in the remunerative employment of the mines." It would seem that here, in a single sentence, Mr. Buckle has summed up the whole field for discussion between the Portuguese Government representatives and General Smuts. Another evidence of what Mr. Buckle calls "the well-known fact that the Portuguese natives are the backbone of the labour force on the mines" is that they did not return home during the recent strike in anything like such large numbers as did the British South African natives. The strike meant a loss of 56,000 in the native labour force, which takes a long time to make up, and as, roughly, one European is employed for every ten natives the present grave unemployment is mainly due to the native shortage. The chairman could hardly refrain from pointing the moral as regards the removal of the ban on native recruiting from north of latitude 22 degrees south. The obstinate and unreasoning resistance of some members of the Ministry to the removal of this restriction is now seen to stand in the way of increasing the field of white employment on the mines—a result which even they can hardly regard with equanimity! For the rest Mr. Buckle's speech was a brief—perhaps too brief—review of the affairs of the Association during the year, and a very pointed reminder for the Government in regard to the importance of the East Coast native in the mining industry.

THE UNION, RHODESIA AND NATIVE LABOUR.

The Capetown Conference does not appear to have achieved much in the direction of enabling Rhodesia to make up her mind as to the future political constitution of our northern neighbour. On Monday the session of the Rhodesian Legislative Council opens at Salisbury, and it is understood that the elected members then intend to pass an ordinance which will not only arrange for a referendum on the constitutional issue, but will also fix its date. The Rhodesian delegates' view of the negotiations appears to be that the conditions offered by the Union Government for incorporation of Matabeleland and Mashonaland in the larger Southern State are not altogether satisfactory.

It is understood that the Union Government proposed to acquire the Rhodesian railways by buying out the railways trust, but not the debentures. General Smuts promised favourable consideration for railway extension, and it was shown that the proposed considerable annual development grant for ten years would be spent by Rhodesia itself on things which Rhodesians deemed most necessary. General Smuts regarded the Messina-West Nicholson and Sinoia lines as most necessary, and he favoured the development of Beira for Rhodesian trade, being willing to help it financially. We have often commented on the anomaly of the Union Railways stopping just short of the Limpopo whilst the Rhodesian railways have been extended as far south as West Nicholson, and if this short missing link in the chain of communications were forged it would unquestionably do much to bring the two countries closer together and to improve mutual trade relations.

From a mining point of view the two outstanding features of the Conference were the declaration by the Union representatives that it was hoped to acquire mineral rights, when the tax would be on profits instead of on gross yield, and General Smuts' statement that there would be no recognised native labour recruiting in Rhodesia for other Provinces, and that the bar against introducing natives from north of latitude 22 degrees would still stand.

In regard to the first of these declarations we may point out that the Rhodesian mining law is admirable in its simplicity and lucidity, and that it seems inadvisable to suggest any amendments along Union lines. As to the second statement, we are not quite sure of the proper interpretation to put upon the Prime Minister's declaration that the bar against introducing natives north of latitude 22 degrees would still stand. Does this mean that a definite decision has been come to that "northern latitude" natives will not be allowed to enter the Union, or is it conditional on Portugal's acceptance of South Africa's terms?

The statement will probably be clarified in the near future, presumably so by a discussion of the terms of renewal or rejection of the Mozambique convention. In so far as the Union is concerned, we can only reiterate what we said last week that if the embargo on boys from northern latitudes was removed it would greatly assist in solving the problem of unemployment on the Reef, and that in the face of the recommendations of two Government Commissions we are quite at a loss to understand why the bar should be maintained. The matter is of so much importance that some clear explanation of the Prime Minister's reported statement seems to be necessary.

Notes & News.

Some Tributes to Advertising.

Notable tributes to advertising have lately been paid by prominent leaders of industry. This testimony has an important lesson for South Africa, where many otherwise progressive business men still lack the courage to follow a bold policy of publicity. According to a cable, Sir Alfred Mond extolled the virtues of advertising at the Swansea Chamber of Commerce recently. He suggested to the members of th Swansea anthracite trade that an active propaganda would abate the smoke nuisance and at the same time increase their revenue. "In the present state of trade," Sir Alfred said, "there is only one thing that can help, and that is not to be afraid to spend what is left to us trying to induce people to buy our goods. There is a tendency for people who know all about a thing to think that other people know the same. The ignorance of the buying public is not taken into account. The enterprising American who came over here fifty years ago and sold off copies of the Encyclopedia Britannica said, 'You could sell the British public fifty-year-old Bradshaws if you advertised them sufficiently.' He may have exaggerated, but there is no doubt that a great deal more in the way of selling things can be done if people will expend more money on advertising." Again, Sir Harold V. Mackintosh, of Halifax, in a speech which he delivered at the complimentary luncheon given at the Midland Hotel, Manchester, in honour of his recently-conferred knighthood, having recalled the statement of his father, "If I had my time to go over again I would get into my advertising stride sooner," said that he started where his father left off. Everyone knew that advertising was essential to a business as raw material. "My firm," he said, "have spent something like half a million in newspaper advertising only during the last thirty years, and yet our 'total' selling costs to-day are less than they were 25 years ago, and probably less than a competitor who spends not a penny in advertising. I want to recommend advertising to business men, however, from another angle than £ S. D. I sometimes think I am more of an advertiser than a confectioner. Certainly, I would not be in any business where advertising did not play an important part. I would sooner give up business and join that happy throng of advertising agents, who, as we all know, work for the love of their profession. If you want a hobby or relaxation, or a bit of fun, do some advertising. What romance is to literature, so advertising is to business."

Important Discovery at Pretoria Silvers.

The Pretoria Silver Mines Company, whose activities have from time to time been reviewed in the columns of this journal, has made a very satisfactory strike on its Dwarsfontein property in the Pretoria district. The lode has just been cut at the 1st level at a depth of 130 feet. At the point of contact, the lode was 2 feet thick and assayed 8·55 per cent. lead and 7·1 oz. silver per ton of 2,000 lb. From the point of contact a drive was put into the north. The lode widened within a few feet to 5 feet and assays 51·4 per cent. lead and 19·8 oz. silver per ton right across the reef. The company is now driving south to a point 200 feet south of this point of intersection, where a diamond drill passed through the lode, the core disclosing it to be 10 feet thick. During the week a representative of this journal inspected the samples brought into town. He describes them as being of very satisfactory appearance and that they have been derived from a lode of strong and enduring appearance.

The secretaries of the Pretoria Silver Lead Co., Ltd., which has an issued capital of £80,030, in 80,030 shares of £1 each, and an area of mining property of about 1,600 acres, write as follows:—With reference to the anticipated cutting of the silver lode referred to in the advertisement of the 9th February last, we are instructed by the directors to notify all shareholders that the silver lode was cut on the 17th inst., on the 130 feet (first) level in the crosscut. The reef being 2 feet thick at the point of intersection and driving north within a few feet widened to 5 feet, assaying over the full width 51·4 per cent. of lead and 19·8 oz. of silver per short ton. Driving is being continued north and south along the lode in order to connect with the north and south winzes, a matter of about 600 feet. The 10-drill compressor plant was installed at the beginning of this month, but there is only room for the use of four drills at present. All machinery is working satisfactorily. Through the courtesy of Mr. Charles Beart, outfitter, of Rand Club Buildings, the directors are able to place on exhibition in Mr. Beart's window a portion of the lode taken right across the face of four feet, to enable shareholders to see the character of the ore.

* * *

Kenya Mining Laws.

A committee has been in session during the past month (on the nomination of the Kenya Legislative Council) to review the local mining laws. A correspondent of the *East African Standard* deems that the first essential to success in the development of the mineral resources is a comprehensive geological survey of the Colony; also "in order of merit, the following amendments to the existing Mining Ordinance, viz., the abolition of the sole prospecting licence; the restriction of all company flotations to an allotment not exceeding one-third of stock and cash to the vendors and promoters (thus restoring the shattered confidence of a timid public). Limiting also the staking of claims per individual to, say, five in any particular group. Always provided, however, that when he has duly performed his assessment work on these five claims, he is at liberty to locate a further one or five as he may deem expedient. Fixing the assessment work per claim per annum at, say, 10 feet solid rock—shaft or tunnel—and 50 feet surface diggings; and especially allowing the individual, or company, to perform all this work on any one of a group of five claims, so insuring the intelligent and perchance commercially successful development of a "pukka" mine. These are the crying necessities, and for the rest, the committee could not do better than adopt British Columbia Mining Laws intact."

* * *

Mining Industry Board.

The members of the Mining Industry Board—we can scarcely express much admiration for the title—after a preliminary visit to the Crown Mines, commenced their labours on Tuesday morning. The first day's sitting was principally occupied with matters of procedure and with listening to the Labour representative's declaration that would-be witnesses were afraid of suffering if their evidence was of an outspoken nature.

The chairman said it had been represented to the board that witnesses might be prevented from speaking freely as they might be made to suffer afterwards for what they had said. He did not anticipate himself that there would be much danger of that kind of thing, but he suggested that assurances should be given by both sides that witnesses would not be made to suffer in any way on account of any evidence they had given.

Mr. Buckle, on behalf of the Chamber of Mines, including the colliery section, and Mr. Price, on behalf of the V.F.P., gave the assurances desired.

Mr. Crawford, speaking for the S.A.I.F., pointed out that the Chamber of Mines to-day had nothing to do with the engagement or dismissal of men. It was in the hands of mine managements. He indicated that he could not therefore attach much value to the assurance of the Chamber.

Mr. Crawford said the Commission might suggest to the Government to reconsider its decision and allow representation of both sides to be attached to the Commission. Mr. Crawford further pointed out that the Board would collect a mass of evidence which it would be very difficult to sift, and that in the preparation of the report of the Commission the help of such advisers would be of great value.

Sir Carruthers Beattie said the Board had agreed to the right to cross-examine. Was there anything else?

Mr. Crawford said that in his letter he not only asked for the right to cross-examine, but he pointed out the extent to which the workers were handicapped as the result of the decision of the Government to eliminate a workers' representative from the Board.

The Chairman: We have no control over that.

Advocate Lucas pointed out that Mr. George, the secretary of the Reduction Workers' Association, was at present detained under martial law. He did not know whether any definite charge had been preferred against him. It was very difficult to prepare the case for the reduction workers without his assistance. He would like to suggest that the Board should make a recommendation that Mr. George might be allowed out on bail.

The Chairman said the Commission could not do anything.

Mr. Hendrikz said the Mine Workers' Union were in a similar difficulty. A large percentage of the members of their head office executive were locked up, and the same remark applied to nearly all their branch executives. Some of their most efficient contractors were in the same position. It was only yesterday he had obtained permission to visit these men.

* * *

Land Bank Finance.

The annual report of the Land and Agricultural Bank of South Africa—to give the institution its full title—is devoted mainly to a review of the depressing agricultural conditions of the country during the past year. The demand for Land Bank assistance continues despite the fact that the Board, owing to lack of funds, has been compelled to severely restrict the scope of its operations. In November, 1920, the Board was obliged, owing to shortage of funds, to stop granting advances and to apply the current receipts towards working off existing commitments. According to the annual report, it was not until July of last year that the Board was able to resume granting of ordinary loans, and then only to a limited extent. Advances are not being made to redeem existing bonds, nor to enable applicants who possess land to purchase more land; furthermore, only advances up to and including £500 are being paid out. The fact that, for a period of about eight months, no new advances were being made naturally resulted in a falling off in the number of applications received; but so soon as the Board was able to renew operations, even to a limited extent, there was a rush for assistance. Of the 2,647 applications received during the year, 850 only were received up to July; the remaining 1,800 were received subsequent to that date. It can readily be imagined how adversely these restricted operations affect the farming community. Never since the inception of this institution has there been such an urgent necessity for financial assistance. To add to the general depression, the price of produce and stock, particularly maize and cattle, fell to below pre-War figures, and the result was that many farmers who had reason to believe that their position was sound have found themselves in serious financial straits.

As regard the bank's own finances, the net profit of £43,959 3s. 8d. has, in terms of Section 43 of Act No. 18 of 1912, been placed to credit of the reserve fund, which now stands at £431,522 16s. 5d. The Board is pleased to be able to record that, since the inception of the bank, the reserve fund has not been charged with any loss in respect of any advance made by the bank. The administration expenses were 0·849 per cent. of the funds administered, and the total earnings represent 5·44 per cent. of the bank's capital. Interest due to the bank during the year amounted to £258,014 9s. 11d., of which £221,634 8s. 6d. was collected, leaving an amount of £36,380 1s. 5d. in arrear at the 31st December, 1921. £32,760 0s. 2d. has since been collected, leaving a balance of £3,620 1s. 3d. outstanding. Instalments of capital overdue at 31st December, 1921, amounted to £9,841 16s. 11d., of which £5,209 9s. 10d. has since been paid, leaving a balance of £4,632 7s. 1d. outstanding. During the year the bank has been authorised by Parliament to raise additional capital in order to extend further assistance to farmers.

* * *

Transvaal Silvers Progress.

Satisfactory progress is being made at the Transvaal Silver property. The quarterly report to March 31 states: At the No. 1 shaft an ore pass has been constructed between the 2nd and 3rd levels, and an ore bin at the 3rd level has been completed, with the exception of the doors and shoots, the manufacture of which has been delayed by a strike in the town workshops. The development footage sampled during the quarter totalled 865 feet, and gave the following results: Payable—240 feet, having an average value of 8·8 per cent. lead and 7·9 oz. silver over 39 inches; unpayable—625 feet, having an average value of 2·8 per cent. lead and 2·3 oz. silver over 37 inches. The above footage is somewhat lower than usual, due, partly, to a strike of employees, and partly to the suspension of development at No. 1 shaft, while the headgear was being raised. The concentrating plant was started up early in January, and, after sundry minor adjustments had been carried out, ran smoothly during the remainder of the quarter. The small furnace resumed operations on the 23rd January, and, since that time, has been occupied in treating concentrates derived mainly from ore taken from the surface dumps. The output for the quarter was 365·9 long tons of lead bullion, containing 41,348·7 standard ounces of silver. A new 13 in. x 26 in. Robey hoist has been erected at No. 1 shaft and should be in operation shortly. The installation of this hoist will admit of handling a considerably greater tonnage than would have been possible with the former temporary equipment, and should result in increasing the tonnage mined and output. In accordance with the decision of the Augmented Executive of the South African Industrial Federation to declare a general strike, the daily paid employees of the company ceased work from the 8th to 20th March, inclusive.

Banket in Ermelo District.

Reports have reached us of a discovery of payable banket reef in the Ermelo district. Further news is awaited with interest.

HADFIELDS, Ltd.

East Hecla & Hecla Works, Sheffield, England.

Workmen Employed during the War, over 15,000.

WORKS AREA OVER 200 ACRES.

SOLE MAKERS OF

Hadfield's Patent ERA Manganese Steel,

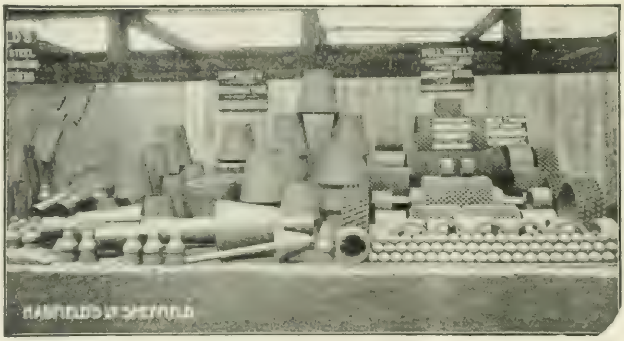
THE SUPREME MATERIAL

For the Wearing Parts of Crushing and Grinding Machinery, etc.

TRADE HECLA MARK

MANUFCTURERS OF
Steel Forgings in the rough, rough machined, or finished for Marine and other Engineering purposes of any analysis and to pass any required test.

Steel Castings
of every description up to 30 tons in weight.



Group of Wearing Parts for Stone Breaking and Ore Crushing Machinery

Mining Requisites
of every description,
including Steel Wheels and Axles, Haulage Rollers and Frames, Angle Pulleys and Frames, Pedestals, Rope Clips, Shoes and Dies, Balls for Ball and Tube Mills, Grizzley Bars, Crushing Rolls, etc.

Makers of the best kinds of

STONE BREAKING & ORE CRUSHING PLANTS

INCLUDING

GYRATORY JAW AND DISC CRUSHERS.

Head Office for South Africa:

46 & 47, Cullinan Buildings, JOHANNESBURG.

'Phone 5900. Tel. Add.: "HECLA." Box 1009.

STORES DENVER, TRANSVAAL (Adjoining Denver Station).

Bulawayo Agents:	Salisbury Agents:	Natal Agents:
WHITMORE & JACKSON,	P. PEECH & CO.,	THOS. BARLOW & SONS (S.A.), Limited.
17 & 18, Agency Chambers.	Angwa Street.	Smith Street, Durban.

THE BUSY MAN'S PAGE.

What to Read in the Technical Press.

Zonal Theory of Ore Deposition.—Mining and Engineering Journal, March 18, p. 489.

Mining and Metallurgy.

Compressed Air Blowers in Mine Ventilation.—Mining and Engineering Journal, March 18, p. 450.

Efficiency in Drilling and Blasting.—Mining and Engineering Journal, March 18, p. 446.

Waste in Investigating Mineral Deposits.—Mining and Metallurgy, March, p. 23.

Factors in Mine Management.—Mining and Metallurgy, March, p. 33.

Synthetic Gold.—Mining and Metallurgy, March, p. 45.
The Braelen Mine.—Economic Geology, March, p. 75.

Engineering.

Ethics for Engineers.—Mining and Metallurgy, March, p. 46.

Chain Gearing.—Colliery Guardian, March 24, p. 741.

Underpinning with Compressed Air.—Compressed Air Magazine, March, p. 84.

Wire Rope Drives.—Colliery Guardian, March 31, p. 790.

Mining Cable Winches.—Colliery Guardian, March 31, p. 792.

Power Load Curves of Ball Mills.—Mining and Engineering Journal, March 18, p. 485.

Coal.

Elimination of Waste in the Coal Industry.—Mining and Metallurgy, March, p. 39.

Coal and its Carbonisation.—Fuel, March, p. 33.

Economic Use of Coal.—Fuel, March, p. 40.

Contact Photographs of Coal.—Fuel, March, p. 43.

French Coal Dust Experiments.—Colliery Guardian, March 24, p. 736.

The American Strike.—Colliery Guardian, March 31, p. 799.

Economics.

Economic Forecasts.—Mining and Metallurgy, March, p. 2.

Mine Safety Movement.—Mining and Metallurgy, March, p. 4.

Scientific Management.—Colliery Guardian, March 24, p. 732.

Work and Industrial Progress.—Mining and Scientific Press, March 11, p. 331.

Costs of American Copper Production. — Mining and Engineering Journal, March 18, p. 442

Iron and Steel.

Present-Day Iron Blast Furnace Practice.—Mining and Metallurgy, March, p. 43.

Oil and Oil Shale.

Oil Supply of the World. — Mining and Engineering Journal, March 18, p. 455.

Oil Shale Studies.—Mining and Engineering Journal, March, p. 496.

INVESTORS' DIARY.

Forthcoming Company Meetings.

(a) Annual general meeting; (s) special or extraordinary general meeting.

Meetings will be held in Johannesburg unless otherwise stated.

May 5.—Bantjes Consolidated, (a and s), 11 a.m.

May 16.—Lydenburg Gold Farms, Ltd., (a), 3 p.m.

May 18.—Modder B Gold Mines, (a), 11 a.m.; East Rand Prop. Mines, (a), 12 noon.

May 23.—Rose Deep (a), 11 a.m.; Village Deep, (a), 12 noon; S.A. Land and Exploration Co., (a), 12 noon; Geldenhuis Deep, (a), 2.30 p.m.

May 26.—City Deep, (a), 11 a.m.; Robinson G.M., (a), 12 noon; Modder Deep Levels (a), 12 noon; Knight Central (a), 2.30 p.m.; Geduld Proprietary Mines (a), 3 p.m.

May 29.—Union Corporation, (a), 11 a.m.; West Springs, (a), 11 a.m.; Daggafontein Mines, (a), 11.30 a.m.; Springs Mines, (a), 12 noon; Brakpan Mines, (a), 2.30 p.m.; Rand Selection Corporation, (a), 3.15 p.m.; New Era Consolidated, (a), 3.45 p.m.

June 1.—Crown Mines, (a), 11 a.m.; Durban Roodepoort Deep, (a), 2.30 p.m.

June 2.—Rand Mines, (a), 11 a.m.

June 3.—Transvaal Coal Corporation, (a), 10.30 a.m.; Anglo-American Corporation, (a), 11 a.m.

June 8.—Meyer and Charlton, (a), 11 a.m.; New Primrose, (a), 11.30 a.m.; New Unified, (a), 11.45 a.m.; Langlaagte Estate, (a), 12 noon; New Goch, (a), 12 noon; Randfontein Central, (a), 3 p.m.; Roodepoort United, (a), 3 p.m.; Randfontein Estates, (a), 3.30 p.m.; West Rand Consolidated, (a), 4 p.m.

June 9.—Consolidated Langlaagte Mines, (a), 10.30 a.m.; Witwatersrand G.M. Co., (a), 10.50 a.m.; Cinderella Consolidated, (a), 11 a.m.; Aurora West United, (a), 12 noon; New State Areas, (a), 2.40 p.m.; Van Ryn Deep, (a), 3 p.m.; Rand Collieries, (a), 3 p.m.; New Steyn Estate, (a), 3.30 p.m.; Government Areas, (a), 3.45 p.m.; Sacke Estates, (a), 4 p.m.

PORTABLE STEAM PUMPS.

Genuine Merryweather "Valiants" Brand New, with many accessories, at about HALF THE MAKER'S PRICE, solely owing to being British Government surplus. Great Bargains. Especially suitable for every description of pumping work, including drainage of excavations and mine workings, well boring, irrigation, etc. Full particulars from—

E. W. FARROW & SONS (Ref. 52), SPALDING, ENG.
Cables: "Farrow," Spalding.

Finance and Information for Investors.

AN EXAMINATION OF BALANCE SHEETS AND REPORTS—DATA FOR SHAREHOLDERS.

EASY MONEY AND A NEW RAND WATER BOARD LOAN.

According to the latest cables from London, the reduction in the bank rate has led to easier monetary conditions in London and an increased demand for all gilt-edged securities. A New Zealand loan of five million sterling, bearing interest at 5 per cent., has been underwritten and was issued at par. A City of Wellington (New Zealand) issue of £700,000 5½ per cent. debentures at £98 was many times over-subscribed.

We understand that the Rand Water Board contemplates placing an issue of £250,000 in London in the near future, and the security offered is such that the terms need hardly be made more attractive than those offered by Wellington. The Rand Water Board, it will be remembered, issued a loan eighteen months ago in South Africa; and though it was on the whole well received, a sum of about £187,000 is necessary to complete the 5,000,000 gallons scheme of bringing water from the Vaal River. In round figures, a quarter of a million will be raised by the Board in London and no difficulty will be experienced in getting the loan underwritten by the London banks. We shall be much surprised if the issue is not considerably over-subscribed.

* * *

New State Areas.

The prominence recently given to the progress of the New State Areas has prompted some readers to inquire about the terms of the Government lease under which the mine is worked by the company. It may be repeated that the consideration payable to the Government is a proportion of the net produce calculated on a sliding scale according to the formula: $80 - \frac{750}{x}$. x = percentage of net produce to recovery. This works out at typical percentages as follows:

Percentage net produce to recovery.	Share to Government.	Percentage net produce to recovery.	Share to Government.
15	30	45	63·33
20	42·5	47·5	64·2
25	50	50	65
30	55	52·5	65·7
35	58·57	55	66·36
37·5	60	57·5	66·96
40	61·25	60	67·5
42·5	62·4	70	69·3

A typical case would work out as under:—Recovery, say, 34s.; costs, say, 19s. per ton; 600,000 tons a year.

Gold yield	£1,020,000
Expenditure	570,000
Working profit	450,000
Amortisation (say)	75,000
Net produce	375,000
Ratio of net produce to recovery per cent.	36·7
Percentage to Government on formula	60
Government's share	225,000
Company's share, inclusive of £75,000 refund of capital or amortisation	£225,000

Thus the shares of the Government and company (including amortisation) would come out at the same figure. The latter represents 15 per cent. on the capital, but as profits tax would have to be paid on £150,000 and dividend tax on the distribution, the dividend could not exceed 12½ per cent. The non-remunerative period may be put at a minimum of three years from now, and, taking interest at 7s. 6d. per share, would make the cost of shares, if bought at the current quotation of 25s. or 26s., 32s. 6d. per share. This would represent a net yield of rather less than 8 per cent. on a dividend of 12½ per cent. If the crushing basis were extended to 75,000 tons a month, with a recovery of 35s. per ton and costs reduced to 17s. 6d., a distribution of 20 to 22½ per cent., after allowing for profits tax and dividend tax, would appear possible. This is, of course, a much better showing, and would indicate that the successful future of the concern largely depends upon ability to crush a large tonnage; which, in turn, depends upon the thickness of reef opened up by development. As in the case of the Government Areas, the Treasury would get the major portion of any profit accruing from the gold "premium."

* * *

C.M.S. Finances.

As recently announced in these columns, the Consolidated Mines Selection Company will pay no dividend for 1921. Although a profit of some £50,000 would seem to have been earned, against £125,000 for 1920, there is all but £152,000 to be provided—at all events for the time being—in respect of depreciation on certain of the company's Eastern Rand and other holdings. A further £100,000 is being transferred back from reserve (reducing that fund to only £67,700) and there will consequently be rather over £25,000 to carry forward at profit and loss account. In recent years, when the company has paid up to as much as (in 1919) 3s. 6d. per 10s. share in dividends, the chairman has consistently warned holders that they must expect a recurrence of lean periods sooner or later. At the last annual meeting he pointed out that the company had experienced fifteen years of dividends, involving an aggregate distribution of £1,223,000, and nine years without returns to the shareholder.

* * *

Mines and Prizes.

In our advertising columns will be found particulars of the scheme whereby Mr. W. E. Bleloch proposes to raise the additional capital necessary to develop the Southern Van Ryn property. The scheme is framed on lines now familiar to the South African public, and involves a trial of skill and knowledge of racing.

MINES DEPT. EXAMS.
CERTIFICATES AWARDED INSTITUTE.
MANAGERS' EXAMS., September, 1921, January, 1922.
We obtained 15 out of a total 22 certificates awarded in South Africa

	Metal	Coal	Totals
Ours	9	6	15
Rest of S.A.	4	3	7
		Total for S.A.	22

OVERSEERS' CERTIFICATES (Metal).
So far as we know we have only had 6 failures during 1921, and secured two-thirds of the certificates issued in S.A. during the past two years.
TUITION (Metal or Coal) by class, correspondence or privately
Mining Institute (Prof. Yates),
St. James' Mansions, Eloff St. Johannesburg

ENGINEERING SECTION.

The Engineer and the Future of South Africa.

We welcome the February number of the *Journal of the University of Capetown Engineering and Scientific Society*, which contains several valuable papers by professors and students on subjects of practical interest. In a soundly-reasoned foreword the editor states:

It has been said that there is no greater benefactor to mankind than he who causes two blades of grass to grow where only one has grown before. This is especially true in our country. Great parts of South Africa are lying waste and if crops could be made to grow in these places the country as a whole would gain very much thereby.

The wealth, prosperity, and happiness of nations depend largely upon what the soil produces, and in our land, where the essentials for the manufacture of goods of one kind or another, are in most cases lacking, the value of the soil must be increased. Crops are literally wealth producers; and the surplus that any nation can produce for export to foreign countries must always be a measure of its trade balance with the outside world. Our mines are certainly also such wealth producers but they do not last. Even now the question of abandoning many mines, on account of the exhaustion of the richer yield, is seriously considered. Such an event would be of great detriment to the country. The soil, on the other hand, brings forth its increase from year to year as long as water and fertiliser are applied.

It is clear therefore that the last two factors for the production of crops are of vital importance. Unfortunately for the greatest part of South Africa, farming under the clouds is a lottery, and, taking the lean years with the fat, many farmers have a difficulty in making a living. With *irrigation*, however, the element of chance is practically eliminated. The rainfall over large areas of South Africa is on the average less than twelve inches a year—some years less than half of this. Under such conditions farming without irrigation is more or less a gamble.

Our country therefore badly needs irrigation and this in turn needs trained engineers and—money. To all our young engineers it should be no small satisfaction to realise that there is an unopened field lying before them in combining electrical, civil, and mechanical knowledge to the solution of the problems of irrigation. Primarily it is the civil engineer who will tackle irrigation problems, but not he alone. The electrical engineer also will get a chance. Where a river is to be dammed up to conserve the water for irrigation purposes, the electrical engineer will make use of the impounded waters to generate electric energy and thereby will make the mighty waters pay a double tribute to mankind—first, furnishing energy for a variety of purposes, and, second, after the absorption of its potential energy, by raising the crops. Often the levels of the land will be such that gravitation unaided cannot bring the water to the desired place—then electrical energy will pump the water to the requisite height.

Not only the water, however, but also the fertiliser is necessary. The modern electric furnace for the fixation of nitrogen is ready to serve. The necessary raw materials are to be found everywhere—air and lime stone. The electric energy required can either be generated by means of water power or it may prove feasible to have large central steam power stations, transmitting electric energy to various centres for pumping of water where necessary, and the production of fertilisers. With the present railway tariff it would possibly be cheaper to transmit the electric energy and produce the fertiliser in a centre where it is required in large quantities, rather than produce it at the generating station, which is situated in a suitable position with regard to coal or water power as the case may be.

In this direction therefore there are many possibilities and for the welfare of our country progressive action in this line is necessary. We, as engineers who enter the field, should strive to educate the public mind to the need for such developments and in that way do our little bit towards increasing the wealth of South Africa.

Irrigation Engineering.

The annual report of the Irrigation Department for last year, in dealing with the work of the mechanical engineering branch, has the following:—Specifications, estimates and general details of power driven irrigation plants have been prepared and submitted to applicants embracing suction gas engines, steam engines, water turbines and hydraulic rams. In the majority of cases drawings were prepared showing the general lay-out of the proposed plants. The number of suction gas engine plants for which complete specifications and estimates were prepared was 16, the estimated total cost being £57,850, representing 1,192·5 b.h.p., with a capacity of 16,800 gallons of water per minute. The cost erected of the completed plant works out at £48 10s. per b.h.p. as against the pre-War price of approximately £20. The area which can be brought under irrigation with these plants working 10 hours per day for a 21 day period is over 1,000 morgen. The increased cost of pumping machinery has seriously retarded progress in the development of this branch of irrigation. Generally speaking, but little construction work in connection with pumping schemes was carried out during the year owing to high prices of material and the depletion of local stocks.

TO LET.

Large Suite of Offices on Ground Floor in Central Position, practically adjoining the new Chamber of Mines Building, and in close proximity to the Stock Exchange and the Commercial Exchange. The building is in the course of erection, and offices can be arranged to suit tenants' requirements. Apply to Secretary, P.O. Box 2213, Johannesburg.

"Hysteretic Repulsion."

In our issue of December 24 last we alluded briefly to a paper which had just been read before the South African Institute of Electrical Engineers by Mr. W. M. Mordey on "Mineral Concentration by Alternate Currents: a Preliminary Study of Certain Physical Effects." As the whole paper has appeared in the journal of the Institute, we are now able to give the following summary:—

Iron and magnetite are attracted by an ordinary alternating current electro-magnet very much the same as by what the author calls a uni-directional magnet. But he found that certain substances, such as spernlin hematite, wolframite, chalcopyrite, etc., which were feebly attracted by a uni-directional magnet were repelled by an ordinary alternating current magnet. This action is not due to eddy current repulsion nor to diamagnetism although particles of these substances take up an "equatorial position" in an alternating field. It is shown that although paramagnetic attraction is exerted on these substances in an alternating field, it is overcome by a force of repulsion which is traced to magnetic hysteresis. Experiments are described showing that by reducing the hysteresis the repulsion ceases and the materials exhibit only paramagnetic attraction. By tests ranging in frequency from 25 to 350 periods per second it was found that after increasing up to a certain frequency, hysteresis entirely vanished at 150 periods in spernlin hematite and in magnetite, magnetic attraction then asserting itself unopposed, the apparently diamagnetic becoming paramagnetic. At such frequencies no repulsion occured. With a multiphase electromagnet a further development took place, these materials in a finely divided form being repelled laterally from the poles, and longitudinally propelled parallel with the poles, a steady stream of the particles travelling slowly and steadily along, the movement being the same whether passing near the poles or through the spaces between them—there was no "polar" action. With a mixture of sand or crushed quartz or gangue and a susceptible mineral it was found that the latter forced its way to the surface, moving upward from the magnet, and then moved away horizontally, finally passing out of the field.

This repulsion was not confined to feebly magnetic substances. It was found that although iron filings and magnetite in a shallow tray adhered strongly over the poles of such a magnet, when raised several inches above the magnet repulsion and migration took place with considerable activity, these highly-magnetic substances being repelled out of the alternating magnetic field. By carefully raising the tray the exact position could be found where hysteretic repulsion overcomes magnetic attraction. It was shown that susceptible materials were attracted into such a field, propelled across it, and repelled from it, the author giving reasons for regarding all these effects as forms of hysteretic repulsion.

That for hysteretic repulsion to take place it is not necessary to use finely-divided materials was evident from a description of the violent repulsion of small lumps of iron which had been separated from blende by a uni-directional magnetic separator. It was found that in such a field, instead of forming clusters and lines of force, magnetite formed parallel plates or sheets or laminae, vertical and mutually repellant—that at a certain distance above the magnet the upper part of these "planes of force" broke up, the magnetic attraction being overcome by hysteretic repulsion, the material being then flung forward horizontally.

Hysteretic repulsion was found to be constant through a considerable distance above the magnet, and the explanation is offered that this may be due not to constancy of field, but to an effect which may be termed meshing or mixing of the phases. It was stated that for a given excitation the speed of migration was 50 per cent. higher with two-phase than with three-phase currents.

A number of experiments are described, such as the driving of susceptible material beyond the magnet and over the sides of the containing dish, causing it to climb up the steep slope of a slanted dish, and the like. These effects are usually obtained rather better wet than dry. It was described how these feebly-magnetic materials were, when repelled in this way, capable of making water flow up hill, the material being carried over the edge of the tray, this being attributed to surface tension; it was shown that it was not due to any direct action on the water. Under the influence of such fields gravitational concentration is reversed, the heavier mineral traversing up-hill, the lighter gangue gravitating downwards. Very fine material moved freely in water, "like a cloud of ink." Examples are given of quantitative results obtained by such dish tests.

By winding or connecting the multiphase magnet suitably it was explained that the material could be made to move in opposite directions from a middle line, the concentrate passing to the two sides of a vessel, leaving the gangue in the middle.

Although the paper is mainly concerned with physical effects, suggestions are made for practical application and preliminary results described, the author confining himself to attempts to solve what authorities have described as the unsolved problem of the magnetic concentration of finely divided, feebly magnetic wet materials.

It was shown that a stream of pulp flowing down a non-conducting launder, under which a suitable multiphase magnet was placed, was so acted on that the stream leaves the launder with the concentrate at one side and the tailings at the other.

Whilst it was pointed out that certain materials were acted on by alternating fields which did not respond effectively to uni-directional magnetism, it was mentioned that the reverse was true in many cases. Some comparison between the two kinds of magnets are made, and the paper concludes with the following words: "As these alternating methods with low inductions and open fields can with certain materials give effects which cannot be got even with the highest uni-directional fields, there may be a prospect of useful results in that direction."

In a footnote it is stated that the paper is based on an experimental study, which was interrupted at the end of 1920 when the author's work called him to Portuguese East Africa, where the paper was put together in order to keep a promise of a paper for this Institute; that there has been no opportunity of making check tests on a number of points that arose during the writing of the paper, nor of referring to works of reference or other sources of information, and that it has been necessary to rely a good deal on memory.

SUCCESSFUL
FINANCIAL PUBLICITY!
CONSULT
THE TECHNICAL PUBLICITY AGENCY.
Advertising Advisers, Contractors and Consultants.
Specialised, Concentrated, Wasteless, Advertising Service.
Complete Advertising Campaigns Planned and Handled. "Copy" Prepared. Best Media Chosen.
Lowest Prices and Best Positions Secured.
Company Flotations a Speciality.
Phone 913. **Box 3723.**
177, STOCK EXCHANGE, JOHANNESBURG.

Bricks from Slimes.

A further effort is evidently being made to solve the problem of the dumps. The great sand and slime heaps which disfigure the surface of the Rand have proved the lodestone of several inventors and patentees, who have tried in various ways to put them to some useful purpose or to cover their surfaces with some kind of vegetable growth. The dumps have served some purpose as vantage points during revolution, and one dump at least has proved of value to the bioscope business. A company styled By-Products, Ltd., now seeks to exploit the slimes. Of this the *South African Master Builders' Journal* states:

The company is engaged in, and is intending to further, the manufacure of bricks from the slimes. The efforts for the last twenty years to find this patent have culminated, and now the process is patented throughout South Africa. A site, including all offices, construction buildings, drying sheds, etc., has been acquired in close proximity to the Driefontein Station, on the Glencairn Mine, at a nominal rent, and there is a railway siding, issuing from the main line, running through the property. A plentiful supply of water is being laid on from the Germiston Water Co., and on the site itself there is found a sufficient extent of slimes to enable the manufacture of bricks being carried on for an indefinite time. It is obvious that the advantages of position and material thus secured will enable the company to capture the markets, not only of the Rand, but of more distant places in railway communication with it. As to the bricks themselves, the experience already gained proves that they can be manufactured by this patent process and under the unique advantages offered by the site, at a much lower cost than those produced by any other method in this country.

Before writing this article we sent one of our representatives to the manufacturing site, and he indiscriminately picked up five bricks lying about the kilns, and which we put to the severest of Government tests, viz., compression tests: Maximum, on the flat, 358,000 lbs.; on edge, 129,800 lbs. Shear test (double shear), 43,008 lbs. Absorption test (24 hours), increase, 8·19 per cent. ozs.

Speaking from intimate knowledge of fifteen years' connection with one of the largest brick industries in England, we have no hesitation in saying that these bricks, when the company have completed their arrangements, will compare favourably with any bricks manufactured in the United Kingdom. This result will be assisted materially by the fact that the patentees are themselves in charge of the works. The present company is simply a parent company, though now actually manufacturing on a small scale, and it is proposed to float an enlarged company at an early date. Meanwhile, however, a considerable amount of money has been expended in laying down plant, purchasing machinery, and in the construction of kilns for the work already in progress.

Artificial Daylight.

One of the most interesting problems in illumination is to provide an artificial source of light which will exactly reproduce ordinary daylight. Such a source of light is invaluable in the textile industry and for the matching of fabrics. One way of obtaining the desired result is to filter the light of an electric or other lamp through special glasses, but a British inventor recently produced another form in which all the light is reflected from an umbrella-shaped reflector on which patches of certain colours are painted. All the light used comes from this reflector and is modified by the colours to give a very exact imitation of daylight. An improved form of this artificial daylight apparatus has just been patented. The reflector consists of two layers of material perforated with holes so that a certain number of spots of the colours are exposed. Radial strips of another colour are placed over the perforated layers, the whole arrangement being mechanically strong and giving the correct areas of the various colours to provide artificial daylight.

The Cape River Diggings.

Details of the output of diamonds from the river diggings in the Cape Province for the month of March present some features of interest:—

	No. of Producers.	Carats.	Value.
BARKLY WEST			
Bad Hope	2	4	£40
Blaauwbank	4	14¾	82
Delport's Hope	38	285¾	2545
Elandsdrift	2	9	62
Forlorn Hope	3	2¾	6
Gong Gong	37	197¾	1637
Good Hope	53	208½	1011
Groot Kop	2	6¾	49
Harrisdale	9	119½	1165
Hebron	63	304	2064
Holpan	26	164	1493
Holsdam	2	5	14
Jonas Kop	1	3¾	46
Kieskama	5	82	624
Klipdam	60	379½	3404
Klipdritt Barkly, West Commonage	65	133¾	738
Last Hope	15	50¼	434
Longlands	83	763½	7603
Niekerk's Rush	18	117	704
Rickett's Pros.	3	20½	146
Rooidam	1	7¾	180
Scholtz's Pros.	25	145	896
Snyder's Rush	17	148½	716
Sweetwater	2	12½	126
Union Kopje	1	3½	36
Van Zoelen's Laagte	4	23	62
Waldeck's Plant	70	509¾	4531
Ward's Hope	12	80¾	619
Winter's Rush	17	319½	2721
Totals	640	4122¼	32764
HERBERT.			
Brypal	14	38½	300
Davisdrift	11	53¾	386
Douglas Kopjes	6	17½	203
Middledrift	4	15¼	132
Mosesberg	1	¼	1
Platdrift	2	14	85
Schmidt's Drift	9	26¾	174
Sevonelles	7	21½	147
Totals	54	187½	1431
KIMBERLEY.			
Robinson's Kop	25	223	2059
Wedberg	17	139¾	1427
Totals	42	362¾	3487
TAUNG.			
Doyle's Prospect	4	19	66
Home Rule	11	82¾	564
Killarney	12	35¾	296
Tlapeng	4	6¾	28
Totals	31	144¼	956
PRIVATE ESTATES.			
Amantia		112½	1410
New Vaal River D. & E. Syndicate		578	4315
Pniel Estate		354¼	2932
River View Diamond Synd.		216½	1956

N.B.—The number of claimholders on the Alluvial Diggings (excluding private estates) in the districts of Barkly West, Herbert, Kimberley and Taung during the month of March, 1922, was 1,402.

HEAD, WRIGHTSON & Co. (SOUTH AFRICA), Ltd.

Specialists in

Gold Mining Plant, Colliery Plant, Blast Furnace Plant, and all Classes of General Engineering.

COAL HANDLING, SCREENING, and WASHING PLANTS.

Send for particulars of the "NOTA NOS" Coal Washer and "MARCUS" Screen-Conveyors.

P.O. Box 1034, 'Phone 3524
or 64-66, Standard Bank Chambers, JOHANNESBURG.

STAFFORD MAYER COMPANY (South Africa), LIMITED.

(INCORPORATED IN MAURITIUS.)

30, Commercial Road, DURBAN.

Codes: Bentley's A.B.C. 5th Edition. P.O. Box 1381. Telephone 3273.
Cable and Telegraphic Address: "STAFMAYER," Durban.

AGENTS FOR:

ENYATI COLLIERY, LTD.
BUFFALO COLLIERY, LTD.
BERNICA COLLIERY, LTD.
BOSCHHOEK ANTHRACITE COAL, LTD.

(INCORPORATED IN MAURITIUS).

Telephone No. 80. Telegrams and Cables: "ENYATI." P.O. Box 31, Vryheid, Natal.
Codes: Broomhall's Imperial Combination; A.B.C. 5th Edition.

ENYATI, BERNICA and BUFFALO COLLIERIES are Contractors to the Admiralty and South African Railways.

FIRST GRADE Coal supplied for Export, Bunkers and Industrial Purposes.

AGENTS FOR **ALBION SHIPPING CO.,** PORT LOUIS, MAURITIUS.

The Week in the Sharemarket.

LONGER HOURS FOR BROKERS?—A TONE OF QUIET FIRMNESS—POLITICS AGAIN DAMP ARDOUR.

Quiet firmness describes the tone of the market during the past week, chiefly due to the fact that only a few London buying orders have been arriving. Politics have again been responsible for damping the ardour of the overseas speculator, but, we think, only temporarily, and our opinion expressed in last week's issue is unaltered.

The after-war craze for shorter hours and less work has, unfortunately, been brought into evidence in local market circles, by an effort on the part of the more active dealing members of the Exchange to extend the business hours of their institution. The suggestion originated owing to the uncertain arrival of London cables, many reaching here after the official 4 o'clock closing hour, and therefore orders arriving after that hour become in many cases inoperative. We regret that this effort to create more energy and business has been thrown out by the majority. This action is difficult to understand in view of the many examples we have had since the War in every form of active business life. Decreased working hours have undoubtedly resulted in a very marked reduction in efficiency and a lowering of the moral standard of ordinary business life, and in view of these facts it is almost inconceivable that the majority of a body of men who look upon themselves as the centre of South African finance should vote against a motion which would tend to create business and further promote the stability of the country, especially in view of the number of labourers employed on the Rand to whom they should have given a lead in the direction of progress and efficiency. We can only hope that the matter will be brought forward at a future date with a better result.

	Fri. 21st.	Sat. 22nd	Mon. 24th.	Tues. 25th	Wed 26th.	Thurs 27th.
Anglo-Am. Corp.	20 1*	20 3*	20 1½	20 0	20 0	20 0*
Apex Mines	6 3*	7 0†	6 6*	6 6	6 6*	7 0†
Bantjes Cons.	6 7½	6 6*	6 6*	6 7*	6 7*	6 9†
Brakpan Mines	46 0*	46 3*	45 0*	45 0*	45 0*	45 0
Bushveld Tins	0 6†	0 6†	0 3*	0 4*	0 4*	0 6†
City and Subs.		2 0	2 2*		2 0*	2 0*
City Deeps	43 6†	43 0*	40 0*	41 6*	42 0*	43 0*
Clydesdale Colls.	20 6*	20 6*		21 0*	20 9*	20 9*
Con. Diamonds	14 3	14 0*	14 0*	14 0	14 3	14 4*
Con. Investments	23 9*		23 9*	23 6*	23 9*	23 9*
Con. Langlaagtes	14 0*	13 0*	13 6*		13 6*	
Con. Mines Select.	13 0*	13 0*	13 3*	13 0		
Con. Main Reefs.	10 3	10 1	10 0	10 3	10 1	10 0
Coronation Freeholds	0 9*	0 9*	1 0†	1 0†		1 0†
Do. Syndicates	4 9*	4 9	4 9	4 6*	4 9	5 0*
Crown Diamonds	6 0*		5 10*	5 9	5 11	5 11*
Crown Mines	38 0†	35 0*	35 0*	35 0*		
Daggofontein Mines.	2 10	2 10	2 10	2 10	2 10*	2 10
E.R. Coals	1 6*			1 6*	1 6*	1 6*
E.R. Deeps	0 10*	0 10*	0 11*	0 11*	0 10	
E.R. Minings	10 6*		10 0*	11 0*	10 3*	
E.R. Props.	7 0†	6 0*		6 0	6 0*	
E.R. Debentures	£85†	£81*	£85†	£85†	£85*	
Eastern Golds	0 6*	0 6*		0 7*	0 6*	0 8
Ferreira Deeps		7 0*				7 0*
Frank Smith Dmds.	3 8*	3 6*	3 8	3 7*		3 6
Geduld Props.	54 3	54 0*	53 9	53 9	53 9	53 9
Geldenhuis Deeps	6 3*	6 3*		6 3*	—	—
Glynn's Lydenburgs	11 9*	12 6*		13 0†	12 6*	
Gove. Areas	82 0	81 3*	81 6	82 4½	82 9	82 6
Hume Pipes	12 6*	13 0*	13 0*	13 0*	13 3*	13 0
Jhb. Bd. of Ex.	31 0*	31 0*		35 0*		35 0*
Knight Centrals	4 4*	4 3*	4 3*	4 3*	4 4*	4 3*
Lace Props.	7 10*	7 9*	7 9	7 6*	7 6*	
Leeuwpoort Tins	6 9*	6 9*	6 9*	6 9*	6 9*	6 9*
Lydenburg Farms	4 8*		4 10	4 4*	4 9*	
Meyer and Charltons	—	60 0*	60 0*			
Middelvlei Estates	1 6*	1 6*	1 8†	1 6	1 6*	1 6*
Modder B.'s	29 0	28 6*	28 9	28 9	28 9*	29 0*
Modder Deeps	42 0	41 6*	41 9	41 3*	42 6	42 3*
Modder Easts	8 4	8 6	8 3*	8 0*	8 1	8 0
Natal Navig. Colls.	30 6*	31 0*	31 0*	31 0	30 0*	30 0*
New Era Cons.	6 3†	5 9*	5 6*	5 9†	*6 3†	6 0*
New Geduld Deeps	1 4*	1 4*	1 4*	1 4*		—
New Kleinfonteins	5 9*	6 0*	6 0	6 0*	6 0*	6 3
New Modders	72 3*	71 6	71 6	72 0	72 6*	72 6*
New State Areas	28 9	28 9	28 6	28 9	29 0	29 0*
Nigels	6 0*	6 0*	6 0*	6 0*	6 0*	
Nourse Mines	11 3*	11 1*	11 6	11 3*	11 4*	11 6*

	Fri. 21st.	Sat. 22nd	Mon. 24th.	Tues. 25th.	Wed 26th.	Thurs 27th.
Pretoria Cements	41 6*	41 6*	41 9*	41 9	41 6*	41 6*
Princess Estates	1 0*	1 1*	1 1*	1 1*		1 1*
Rand Colls.			0 9*		1 0*	0 9*
Rand Nucleus	1 1*	1 1*	1 1*	1 1*	1 1	1 1
Rand Select Corp.					50 0†	
Randfontein Central	10 0	10 0*	10 0*	10 0*	10 0*	
Do. Estates	15 10*	15 10½	15 10½	15 10*	16 0	16 0
Rouxville Dmds.				1 1*	1 2*	1 0*
Roberts Victors			8 6*	8 6*	8 6*	
Rooibergs	3 9†	3 9†	3 9†	3 9†	3 0*	3 9†
Ryan Nigels					3 3	
Sunnner and Jacks	2 3	2 9*	2 9*	3 0*	3 1*	3 2*
S.A. Breweries			26 0*	26 0*	26 0	
S.A. Lands	4 3	4 3*	4 3*	4 2*	4 3*	4 4*
Springs Mines	38 0*	38 0*	38 3	38 0*	38 6	38 6*
Sub-Nigels	11 3*	11 6	11 0*	11 3*	11 3*	11 3
S.A. Alkali	12 6*	12 9*	12 3*	12 6*	12 3*	12 6*
S.A. Townships	8 3*	8 3*	8 3*	8 3*	8 3*	8 3
Transvaal Lands		18 0†				
Trans. G.M Est.		8 6*	8 6*	8 9†		8 6*
Transvaal Silvers	19 0	18 3*	18 0	17 3*	17 3	17 6*
Tudors	0 9*		0 9†	0 9	0 9†	0 9†
Van Dyks		1 3*	1 3			
Van Ryn Deeps	62 6*	62 0*	61 3*	61 6*	62 6*	62 9*
Village Deeps	10 0†	8 9*	9 9†	9 3†	9 0*	9 9†
West Springs	9 3*	9 1½	9 0	8 6*	8 10*	9 3
West Rand Cons.					2 4*	2 5*
Western Rand Est	3 10*	3 9*	3 9	3 9*	3 9	3 9*
Witbank Colls.		39 6*		39 6	38 0*	39 0
Witwatersrands	12 6*					
Wit. Deeps	10 6*	10 6*	10 6	10 3	10 6*	10 6*
Zaaiplaats Tins	2 6†	2 3†	2 0†	2 11	1 11*	1 0
Union 5 per cent.	£103*	£103*	£103	£103	£103	£103¼*

* Buyers. † Sellers. a. Odd lots. b. Ex London.

OSBORN'S SPECIALITIES.

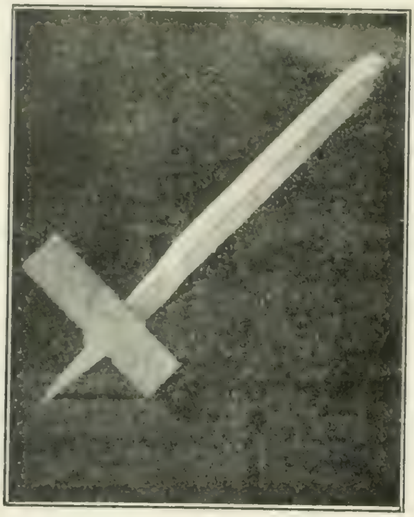
◆

A Few of Them:

"MUSHET"
THE ORIGINAL HIGH-SPEED.
STEEL,
CAST TOOL STEEL,
DRILL STEEL, NICKEL STEEL,
SPRING STEEL,
RUSTLESS STEEL,
GRIZZLEY AND TUBE MILL BARS.

— GET THE BEST —
FROM
SAMUEL OSBORN (S.A.), LTD.,
Box 3162 JOHANNESBURG. 'Phone 4673
WORKS: CLYDE STEEL WORKS, SHEFFIELD

SHOCK TOOLS



SHOCK Tools have always been the toolmakers greatest problem—how to avoid the "weak spot"—how to combine extreme toughness and hardness—how to avoid crystallisation in working.

"PAX" NONBREAK BRAND

—the result of many years' experiment—comes very near perfection in the solving of these problems.

Primarily made as an unbreakable chisel steel, it has now been tested with results of uniform excellence for: Rivet Sets, Punches, Snaps and Pneumatic Tools generally, Mining Drills, Machine Chisels and Cold Sates, and has proved itself a steel that will stand punishment in the heaviest degree.

Being oil-hardening it does not run or twist under treatment.

Tested at the "S.B.N." Works on pneumatic chipping of high-speed steel ingots—a test chisel (as illustrated) has been subsequently driven clean through a block of mild-steel and then, without dressing, taken back on to chipping cast iron and cast steel ingots.

When correctly hardened—the working edge is hard to the file test, but will not chip or break.

The first cost is naturally higher than standard qualities, but its durability and freedom from breakage make it a cheap steel in practice.

There are doubtless some tool jobs that give you trouble—try "Pax" Nonbreak Brand as a cure.

"Pax" Nonbreak Steel is manufactured by

SANDERSON BROS. & NEWBOULD, LTD.,
SHEFFIELD.

Sole Agents for South Africa

BARTLE & CO., LTD.,
LOVEDAY HOUSE. P.O. Box 2466. Phone 3553. Wires "Faggot."
JOHANNESBURG.
And at KIMBERLEY and DURBAN.

Telegrams: "NIVONIA," Johannesburg.
'Phones: 2196,—2197,—2198

J. & R. NIVEN, Ltd.,
ENGINEERS,
CONTRACTORS,
MERCHANTS.

BALATA BELTING
JAMES DAWSON & SON, Ltd.
BITUMEN SHEETING
GEO. M. CALLENDER & CO., Ltd.
BOILERS
PENMAN & CO., Ltd.
COAL CUTTERS AND CONVEYORS
JEFFREY MANUFACTURING CO.
COLLIERY PLANT
CAMPBELL, BINNIE, REID & CO.
DRILL STEEL
JOHN NICHOLSON & SONS, Ltd.
ENGINES, LOCOMOTIVES
ANDREW BARCLAY, SONS & CO., Ltd.
ELECTRIC LIFTS
A. & P. STEVEN, GLASGOW.
CRANES
BUTTERS BROS., GLASGOW.
HOSE, VALVES, SHEET RUBBER
THE LEYLAND & BIRMINGHAM RUBBER CO., Ltd.
LUBRICANTS
THOS. HINSHELWOOD & CO., Ltd
STEEL SCREENING
THOS. LOCKER & CO., Ltd.

Barsdorf's Buildings, Marshall Street,
JOHANNESBURG.

SULZER
HIGH-LIFT CENTRIFUGAL
PUMPS.
For Mine Drainage, Waterworks, Etc.

Pumping Set suitable for lift of 2,500 ft.

LARGE LOCAL STOCKS IN
MEDIUM AND LOW-LIFT PUMPS.

For particulars apply to:
RICE, WILSON & HERD,
86, 87, 88, 96, Standard Bank Chambers, Commissioner St
P.O. Box 930 Telephones 2299 & 2300. JOHANNESBURG.

Also South African Agents for
CALLENDER'S CABLE & CONSTRUCTION CO., LTD.
BRITISH THOMSON-HOUSTON CO., LTD., etc., etc.

RHODESIAN SECTION.

MULINGWANE MINERALS.

The Essexvale correspondent of the *Bulawayo Chronicle* writes: Mr. E. Warren, who has been successfully running the Kestrel Mine, about seven miles from Essexvale Siding, under the Mulingwane hills, had an excellent return for March, approaching £1,000, from about 300 tons of rock. The Kestrel is run on most economical lines, with an efficient reduction plant, consisting of a 5-stamp 1,250 lb. mill, supplemented by a cyanide plant. In the early days of Rhodesia the Makutenpane district, by which name the district was then generally known, was a favourite field for the prospector, and many were the properties pegged, and many brought to the production stage, though few are alive to-day. Yet there are still new reefs to be discovered, as Mr. Warren has just demonstrated by locating and pegging a virgin reef which he has named the Aurora. The reef is only about half-a-mile from the present mill site and has a long strike. Values so far are estimated to average about 12 dwt. Active development has commenced.

Mr. Warren has also taken up the Slope Mine in the Filabusi district, under an arrangement with the owner, Mr. A. Beecroft. The mine will be reopened for further development and production, with option of purchase. Figures are not yet to hand, but it is known that the White Rose mill has been running on rich ore during the past month. The mine has been reopened, after a lapse of many years, by Mr. B. G. Byerley, who, despite many difficulties and discouraging results, has now the satisfaction of getting into a gold shoot carrying high values.

* * *

GWANDA DISTRICT.

The Gwanda correspondent of the same paper writes: Mining promises to brighten once more, and one hears of several properties being pegged and development is proceeding quietly. The talk of the district at present is the "Homestake" Mine, owned by Mr. A. Blumenthal. The property is on Insindi Ranch, about one mile north of the Nsindi Kopjes. It is reported that up to the present the strike has been proved for a distance of 800 yards, the reef and values so far being very promising. The Abercorn Gold Mining Company have an option on the property for a good round sum, running, I am told, into five figures. The Champion Mine is going strong in the production of arsenic. Mr. Aserman is to be congratulated on his continuing operations on this property and opening up what we hope will turn out a big and paying industry. It is to such men as Mr. Aserman who have grit and determination that Rhodesia looks to to develop its mining resources, and we hope one day to be able to record that he has struck another "Lonely." Some of the mines report a grave shortage of water already. It is hoped that none will have to cease milling operations for this reason.

* * *

SHAMVA PROFITS AND ORE RESERVES.

The following is the report for the quarter ended December 31, 1921, of the Shamva Mines, Ltd.: Milling results—Ore crushed, 175,800 tons; fine gold won, 7,020 oz.; tons cyanided, 175.693 tons; fine gold won, 17,474 oz.; total yield fine gold, 24,494 oz.; value, taking gold at £4 17s. per ounce, £118,795; working costs, £84,345; working profit, £34,450. Ore reserves—Total ore reserves at December 31, 1921, 2,801,000 tons; value, 3·5 dwt. With the whole plant, including the additions, running normally throughout the period, tonnage crushed shows a marked improvement, and working costs at 9s. 7d., show a reduction of 1s. per ton. As the gold premium applicable to past quarterly reports could not, at the time of publishing the same, be accurately ascertained, there will be an additional profit shown in the annual accounts. In view of the increased crushing capacity of the plant, and the impossibility in practice of following exactly in stoping operations the contour of the ore bodies as indicated by development, the stopes thus yielding a considerable tonnage of "excess" ore, of lower but still profitable grade, it was decided, in order to approximate more closely to the position resulting from the inclusion of such ore, to recalculate the ore reserves, which now, therefore, are shown to be 2,801,000 tons, averaging 3·5 dwt., as compared with 1,781,000 tons, averaging 4·1 dwt., at the end of the previous quarter.

* * *

CLACK—FOUNDRIES.

An industrial marriage of Rhodesian interest has been consummated by the union of Clack and Co. with Foundries Ltd., says the *Bulawayo Chronicle*. Clack and Co. is a prosperous and enterprising firm that has made great progress in a few years. "Miss Foundries" is a more recent settler among us, but is thoroughly acclimatised and a fine specimen of young Rhodesia. A becoming modesty distinguishes the contracting parties, but this does not imply shyness. Shyness is not good for business nowadays. And now the happy couple are settled in and around "The Corner House," Abercorn Street, 12th Avenue. A *Chronicle* representative called to have a look round. He had heard—we have all heard—that trade is dull, but there was no indication of dullness about the Clack and Co. establishment. The firm has a European staff of 32—in the office, yards, engineering shop, foundry, boiler shop, etc. This is exclusive of a small staff at the Salisbury office, of which Mr. Tom Burnet is the head. Mr. Clack directs operations from a splendidly-appointed office in the "Corner House," the distinguishing feature of which is artistic furniture made of Rhodesian teak. In the yard behind are machinery stores, and an object of particular interest at present is a British-Matthews conveyor, a sort of roller track, which is a great labour and money-saver in the conveying of timber, grain and all heavy articles. It is an ingenious and yet simple contrivance, and one day it will become as extensively used here as it is in the United Kingdom and America. Across the road is the engineering shop, foundry, pattern-making shop, and so forth, all newly-erected and fitted with machinery capable of doing an enormous variety of work. At the time of the visit a couple of huge castings, a grinding pan and its endcasing, weighing altogether 22 cwt. were whirling on a lathe. This lathe is 22 feet long and the biggest in the country outside the railway workshops. Another almost as large stands near, and there are many more machines for drilling, slotting, planing, etc. All are driven from overhead shafting, electricity being the motive power. Next door is the foundry, where castings of all sizes and for all purposes are made. The moulding floor is twice as big as that at the old foundry, near the Waterworks, but even so it is too small and an extension is already talked of. Across the yard is the pattern-making shop and the office of Mr. Trevenen, who manages the foundry. On the other side of the street is the boiler yard, containing a great deal of material in course of repair and reconstruction. In every department there is plenty to do—so much, indeed, that the eight-hour day is only dreamed of.

WAKE UP, SOUTH AFRICA!

TO BROADEN THE BASE FOR TRADE, TRAFFIC AND REVENUE; YOUR NEED IS A WHOLE LINE OF NEW OUTCROP MINES.

THE SOUTHERN VAN RYN IS THE FIRST MINE OF THE LINE YOU REQUIRE A GREAT OUTCROP MINE—1,662 CLAIMS—ON THE SAME REEF AS THE FAMOUS MODDERS. . . . . .

The Coming Mine of the Far East Rand

Why wait for deep level leases requiring millions of capital when you can finance on better than ground floor terms *your own mine,* **with no share of the profits to pay. There is no better value in mining.**

OPEN OFFER TO THE PUBLIC

Take a winning hand while you can by applying direct to the Company for New Southern Van Ryn shares on the terms stated in the first form herewith or by applying to MINES AND PRIZES, LTD., for shares on the terms of that Company's Special " A " and " B " Prizes offers. *Reliable Agents wanted everywhere.*

(Registered in the Orange Free State.)

To the Directors, New Southern Van Ryn G.M. Co., Ltd., 151-3, *New Stock Exchange, Johannesburg.*
To the London Committee, New Southern Van Ryn G.M. Co., Ltd., 3, *London Wall Buildings, E.C.* 2.

DEAR SIRS,

I hereby apply for.................shares of 2s. 6d. each in the New Southern Van Ryn Gold Mining Co., Ltd., on the terms and conditions that I receive a commission of 20 per cent, or 6d. per share in cash, to be deducted from the purchase price of the share, equal to 2s. per share net; and, further, the right of option for twelve months from the 15th April to take up a further number of shares equal to the number of shares which may be allotted to me on this my application, and on the same terms and price, viz., 2s. per share net.

I send you herewith my cheque for................................., being payment in full for the ....shares after deducting the 6d. per share commission, I hereby authorise you to place my name on the register of the Company as holder of the said.................................. shares when allotted to me.

Please write distinctly.
Name in full ....
Address ....

To the Directors, Mines & Prizes, Ltd., P.O. Box 1121, Johannesburg.

I hereby purchase from MINES & PRIZES, LTD., ... shares, being..............lot or ....lots of two each at 2s. 6d., equal to 5s. for each lot of two shares in the NEW SOUTHERN VAN RYN G.M. CO., LTD., in terms of the Offer " A " made by your Company.

I hereby purchase from MINES & PRIZES, LTD., ... shares, being.............. lot or .... lots of four each at 2s. 6d., equal to 10s. for each lot of four shares in the NEW SOUTHERN VAN RYN G.M. CO., LTD., in terms of the Offer " B " by your Company.

I hereby agree to abide by and accept as final the rules and conditions governing the competitions referred to in the Offers " A " and " B " as fixed by the Board of Mines & Prizes, Ltd., and to accept as final the awards and decisions of the Auditors to the Company.

I enclose my cheque, money-order, or remittance in payment of the said............shares, and request you to send me your Company's vouchers for the shares hereby purchased, and the coupon or coupons for use in the Prize Competitions.

Name in full......................................
Address ....

TRADE AND INDUSTRIES SECTION.

Week in the Mining Material and Engineering Trades.

BUSINESS DULL—IRON AND STEEL—TIMBER AND BUILDING MATERIAL—NATIVE LABOUR—TIMBER AND SECOND-HAND MATERIALS—ELECTRICAL GOODS—COAL—IMPORTANT MERCHANT'S VIEWS ON CONDITIONS.

General.

Contrary to the views previously generally expressed, business during the past week has been poor and scanty. It may at once be said that things in the mining and material world are not too good. Merchants have perhaps (can anyone blame them?) looked upon the end of the strike—leaving out the Martial Law as the forerunner of much-needed business—as a sort of salvation; but now, it cannot be gainsaid, the big problem of unemployment is staring us in the face. The Chamber of Mines and the Mining Industry cannot, the public hopes, fail to come to a satisfactory issue. The Mining Industry Board is now threshing out problems which are eagerly awaited by the public, as are those now being discussed in Genoa.

Second-hand Machinery.

There is very little to report as to business during the past fortnight in the second-hand machinery market; the mines have purchased spares when they have had an opportunity of picking them up cheap, but otherwise very little has been done except in "penny numbers," such as fencing posts and wire required for farms. As a matter of fact, there has recently been a good deal of fencing work done, farmers endeavouring to keep their outside cattle out and thus securing the whole pasturage for their own cattle. There has been a fair business generally in supplies for small mills and gold recovery plants by a number of small syndicates which have been formed lately to work dumps and claims on the southern series. At the moment there is little doing in big machinery, but there is no getting away from the fact, said one of the largest dealers, the second-hand machinery merchants are on the eve of good business within the next two or three months, and that those who have got the requisite articles will get their price for them.

Iron and Steel.

Business on the Commercial Exchange has been slow this week; inquiries there have been, but not of the volume which was generally expected. One may say, indeed, that the week's trading has been poor and disappointing, on the whole. This notwithstanding, one of the first importing houses has to record a better month than any experienced for a very long time. He rightly attributed this to the weeding out of speculators who seem now to have come to the end of their tether. He stated that he had not in any way gone into the gamble which we have seen of late, which of course a strong financial position has enabled him to avoid, and now not unnaturally looks forward to a time which will recoup him for past troubles. As was predicted in these columns months ago, shortages are occurring in mining materials; steel plates, ½ in. and ⅜ in., especially are short, to be followed, it is said, very soon by a general shortage in specialities. But this, in view of the natural disinclination of merchants to indent during the recent months of trouble, should soon give place to a better settlement. Concisely the position may be put that the buyer at present is getting the benefit of price reductions. The merchant generally has to sell at a loss in view of competitive prices and to his having been unable to indent for some considerable time. Withal merchants are in their opinions buoyant and are looking to good business towards the end of the year.

Latest Quotations.—Dunswart iron, 22s. per 100 lb. basis price; Union Steel Corporation, Ltd., 25s. basis; imported iron and steel, flats, rounds and squares, from 28s. 6d. to 35s.; channels and joists, 30s. to 32s. 6d.; imported angles, 32s.; smaller sizes, 33s. 6d.; tee iron, 32s.; shafting, ½ in. down to 3-16 in., 7½d. to 9d. lb.; ⅝ to 1½ in., 6½d.; 1¾ in. to 6 in., 5½d.; steel plates, 1-16, ⅛, 3-16, 23s. 6d.; 10 x 5 and larger, 25s.; spring steel, 7½d. to 8½d. lb.; bolts and nuts, hexagon, round, ⅜, 8½d. to 9¼d. lb.; ½ in., ⅝ and ¾, 40s. to 45s. per 100 lb.; hexagon nuts, ⅜, 8½d.; ½ in., ⅝ and ¾, 7½d.; fish plates, bolts and nuts, ⅜ in., 8d. lb.; ½ in., 6d.; ⅝ in., 5½d.; ¾ in., 5d.; dog spikes, 35s. per 100 lb.; rivets, ¼ in., 11d.; ⅜ in., 9d.; ½ in. and ⅝ in., 37s. 6d. to 40s. per 100 lb., ⅝ in. 50s.; brass rods, ¼ in. 1s. 5d.; ⅜ in. 1s. 3d.; ½ in. 1s. 2d.; ⅝ in. upwards, 1s. 1d. per lb.; hexagon brass rods, 1d. lb. extra; copper rods, ⅜ in., 2s.; ½ in., 1s. 11d.; ⅝ and upwards, 1s. 9d. lb.; tool steel, 2s. 11d. to 3s. 3d.; brass sheets, 1s. 10d. to 2s. lb.; copper sheets, ¼ in. to 18 gauge, 1s 10d. lb.; 20 gauge, 1s. 11d.; 22 gauge to 28 gauge, 2s. lb.; firebox copper, 2s. lb.; copper tubes, ¼ in., 3s. 3d.; ⅜ to ⅝ in., 2s. 6d.; ¾ to 4½ in., from 2s. to 2s. 4d. lb.; phosphor tin, 2s. 11d.; ingot tin (Lamb & Flag), 2s. lb.; ingot lead, £28 per ton; drill steel, 6½d.; hollow, 9¾d.; 1¼ in., 9d. to 10½d.; wire nails, 30s. to 35s.; shovels, 30s. to 40s. doz.; wheelbarrows, 40s.; picks, 37s. 6d. to 50s.; pick handles, 19s. 6d.; hammer handles, 14 in., 7s. 6d.; 18 in., 9s. 6d.; 24 in., 13s. 6d.; 30 in., 17s. 6d.; 36 in., 25s.; barbed wire, "Shorthorn," 69 lb., 13½ gauge, 22s. per coil; plain galvanised fencing wires, No. 8 gauge, 100 lb. coils, 21s. 6d. per coil; No. 10 gauge, 100 lb. coils, 24s. 6d. per coil; No. 12 gauge, 100 lb. coils, 26s. 6d. per coil; bulb tee fencing standards, 14 lb., 19s. 6d. per dozen; 12 lb., 23s. 6d. per dozen; black baling wire, 14 gauge, 19s. per coil, 100 lb.; 12 gauge barbed wire, 22s. per coil, 96 lb.; plain wire, No. 8 galvanised, 21s. per coil, 100 lb.; fencing standards, 12 lb., 20s. per dozen; droppers, 4 ft., 1½ lb., 3d. per dozen; screening, 3s. to 9s. 6d. per sq. yd.; cyanide, 1s. 7½d.; zinc shavings, 1s. per lb.

Combine of British Engineering Firms.

Five of the biggest engineering companies in Britain have entered into a working agreement under the name of the British Power and Traction Finance Co., for the purpose of securing engineering contracts abroad, in order to combine their respective experience and resources. The directors of the new company comprise representatives of Messrs. Cammel, Laird and Co., Sir William Arrel and Co., Ltd., the Prudential Assurance Co., Ltd., the English Electric Co., Ltd., the North British Locomotive Co., Ltd., and John Brown and Co.

Engineering Lock-out in Britain.

The latest reports as to a probable settlement are unfortunately bad and mean, as far as one can at present see, the throwing out of employment of 600,000 hands, in addition to 250,000 members of the Amalgamated Engineering Union now already out.

In connection with the 1924 British Empire Exhibition at Wembley, a mechanical navvy, is now in course of erection which is of the type of an eighty ton steam-driven navvy capable of scooping out from two to four tons of earth [illegible] sixty feet boom.

Native Labour.

Mr. [illegible], who presided at the annual general meeting of the Witwatersrand Native Labour Association, Ltd., on Thursday last, said *inter alia*, that the year under review probably marked the high-water mark in the scale of ascending costs which commenced during the War. It had been necessary during the present year to increase the capitation fee to £4 10s., which probably would fall to £4 at an early date. The Chairman stressed the vital importance of the new Convention.

A [illegible] company has been formed to develop an invention with the object of substituting nickel for the tin with which tinplates are coated. Exhaustive experiments are now being conducted at Swansea.

Timber and Building Materials.

Business during the past week in timber and building materials has been fairly satisfactory—not so much perhaps in the actual turnover as in the number of inquiries which have been rather numerous and from the right quarter, which seem to point to increased business very shortly.

Timber prices.—3 x 9 deals, 1s. 1d.; scantlings, 10½d.; beaver boards, 4¼d. to 4½d.; floorings, 6¼d. to 6½d.; ceilings, 4½d.; Oregon, 5s. 6d. to 6s. 6d. a cube; pitch pine, 7s. 6d. to 8s.; corrugated iron, 8d. to 10d. Furniture timber: Burmah teak, 17s. 6d. per cube here for first quality, 14s. 6d. for second at the coast; American oak, 1 in., 10½d.; 1½ in., 11d.; 2 in., 11½d., at coast; and Japanese oak, 1 in., 1s. 1d.; 1½ in., 2 in., 1s. 2d., at coast; West African mahogany, 1 in. to 4 in. thick, 26s. 9d. to 27s. 6d. per cube at coast; Rhodesian mahogany, 9s. per cubic foot at mills; Honduras mahogany, 30s. per cubic foot; American yellow pine, 1s. 6d. per foot of 1 x 12 here; American pine shelving, 10½d. per ft.; 3-ply wood, 3 m.m. up to 5 m.m., alder and birch, 4d. to 6½d. per sq. ft.; oak and teak, 3-ply, 11d. per sq. ft. Prices for bricks remain unchanged at: Klompje bricks, 25s. per 100 at works; fire bricks, £10 per 1,000 at works; mixed, 70s.; wire-cuts, £4 10s. to £5; and £5 for pressed per 1,000, at kilns; columns from 20s. to 30s., according to size; roofing tiles, Marseilles, £25 per 1,000 at the works; chimney pots, 12 in., 7s. 6d.; 15 in., 9s.; 18 in., 10s. 6d.; dry red oxide, 16s. per 100 lbs.; white lime, 7s.; unslaked, 10s. 6d. per 180 lb. bag; 8 lb. bag, 1s.; blue lime, 4s. 3d.; blue plaster lime, 5s. 3d.; cement, 11s. 6d. a bag; damp course and roofing, 36s., 54s. to 55s. for 1 to 3-ply.

Electrical Goods.

There are no changes to report in prices, but business in town and country is, said a leading importer of electrical wares, better and from what he can gather likely to improve continuously; in fact, he looks for a decided move forward next month. Goods are coming in freely from Britain, but rather slowly from the Continent. All lines are now well stocked.

Coal.

Provay's patent coal tipper is, in the opinion of a leading merchant who has been in Delagoa Bay recently, immense, and here to stay, or rather to tip. He told me that the machine made by Messrs. Wright, Boag & Co. works magnificently—like clockwork, absolutely to perfection—tipping out 250 tons of coal per hour easily. The Lourenço Marques harbour authorities are, he says, now in treaty for a plant of three times the size, viz., 750 tons an hour, and so pleased are they with Messrs. Wright & Boag's product that there is no question of tenders. The arrival of this larger plant will, he thinks, shake up Durban harbour authorities considerably. He said, *inter alia*, that Delagoa Bay showed many improvements in force since his last trip, about twelve months ago; the dredging operations have now ensured a depth of water of from 40 to 45 feet, which, of course, covers all requirements. About 20 whites and 400 boys are presently making preparations for the further 750 tons an hour coal tipper. My informant said that as far as he could gather business seemed to be better in Delagoa Bay than here, and there was altogether a more prosperous look in business circles. Lourenço Marques, unlike the Rand, and indeed its parent, has had no revolution, red or otherwise, to contend with.

Rand Conditions.

In a conversation with a mining magnate this week, one gathered that things were looking as if they were picking up somewhat; the mines are starting to buy a little more freely than they were, and although the country is still in a state of impecuniosity, the crops are still in such a state as will enable farmers to realise more than previously, and thus bring into circulation a little ready money. He said there was undoubtedly a feeling of optimism about, and that we had turned the corner of our winter of discontent. It would, he thought, be a long incline to climb, but one had now touched the bottom. It was, he thought, a big thing that we had come to grips in the matter of the Commission now being held, and he looked forward to satisfactory results. He thought that the forthcoming Mozambique Convention settlement might settle outstanding conditions which were always causing anxiety and fear to embark upon schemes in connection with Mozambique territory. Prices generally, he said, are lower than they have been, and he thought that they might even go lower, but that they would be more normal—no big fluctuations entailing enormous losses as in the past.

Financial.

According to latest advices from London, War Loan 5 per cent. stock is again forging ahead and stands now at a higher level than ever. Emphasis is laid on the fact that the success of the recent New Zealand loan of £5,000,000 sterling at 5 per cent. confirms the view that a permanently lower level has been established for investment values and that all fixed interest-bearing gilt-edged securities are still under-priced on their prospects.

The City of Wellington (New Zealand) issue of £700,000 in 5½ per cent. debentures at 98 has been fully subscribed.

Reserve Bank.—Statement dated April 22 shows ratio of cash reserves to liabilities to public as 82·2 per cent.

Wages in Britain.

The British *Labour Gazette* estimates that at the end of March weekly full-time rates of wages in industries were approximately 100 per cent. above pre-War rates, and that as the length of the normal working week was now reduced to 44-48 hours as compared with 48-60 before the War, the percentage increase in hourly rates of wages would be substantially greater.

Johannesburg tramway receipts, as was expected, suffered very severely, being only £12,453, compared with £58,988 in March last year.

Wireless.

A tremendous expansion in wireless telephony in Britain is foreshadowed, in which the Marconi Company will take a big part, placing Britain more on a par with the United States.

Metal Market Quotations.

London quotations, 24th inst.: Standard copper, £59 10s. cash and £60 5s. forward; electrolytic copper, £64 10s. cash, £66 10s. forward; standard tin, £153 7s. 6d. cash, £154 17s. 6d. forward; foreign lead, £24 2s. 6d. cash, £23 12s. 6d. forward; quicksilver, £10 17s. 6d.; bar silver, 34¾d.; and bar gold, 93s. 5d. per oz.

The South African
Mining & Engineering Journal
THE ONLY WEEKLY MINING PAPER IN THE CONTINENT OF AFRICA.
Established 1891.

Vol. XXXIII., Part I. JOHANNESBURG, TRANSVAAL, SATURDAY, MAY 6, 1922 No. 1597.

Some Views in the Gatooma Mining District, Rhodesia.

Gatooma Thirteen Years Ago.

The Cam and Motor Mine, Eiffel Flats.

Gatooma from the Air.

The Eileen Allanah Mine, Eiffel Flats, Gatooma District.

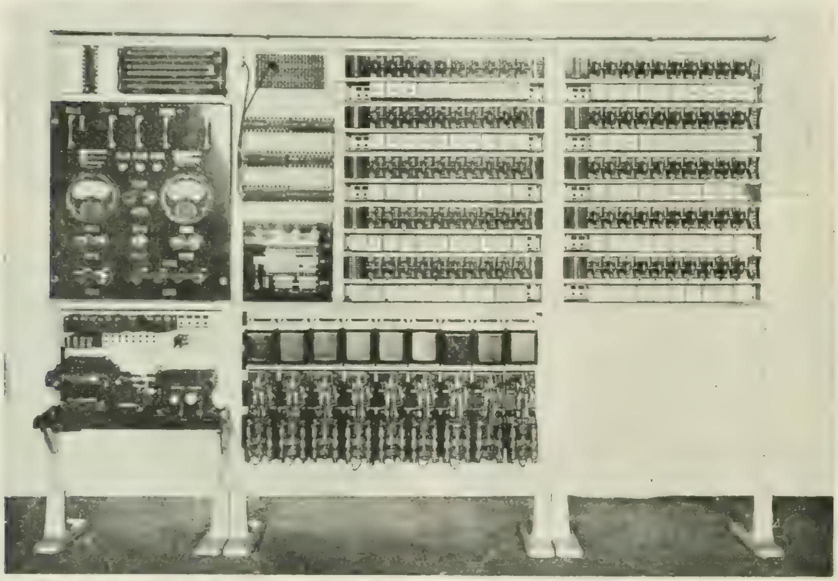
Gatooma, which has grown from a mere place-name to a substantial township in the past 13 years, has witnessed many vicissitudes, but the outlook is now improving. Some important discoveries have recently been made in this area, and one or two of the "older" mines are understood to be doing better.

SIEMENS BROTHERS

AUTOMATIC TELEPHONES

In addition to a number of
PUBLIC EXCHANGES FOR LARGE TOWNS
we have supplied scores of
PRIVATE AUTOMATIC EXCHANGES

Our EXPERIENCE is wide—Our SATISFIED CUSTOMERS numerous



PRIVATE AUTOMATIC EXCHANGE BOARD 100 Working Lines

CHEAP TO MAINTAIN—SIMPLE TO WORK

IMMEDIATE DELIVERY FROM LOCAL STOCK

Representatives in South Africa:

A. J. G SIMPSON, A.M.I.E.E.
African Life Buildings, 85, St. George's St.,
CAPE TOWN.
P.O. Box 239 Cape Town. Telephone 1202 Central.

G. H. B. BERNARD, A.M.I.E.E.
9-10, Cotts Buildings, Rissik and Fox Sts.
JOHANNESBURG.
P.O. Box 7404 JOHANNESBURG. Telephone 408 Central.

Telegrams: "SIEMENS"

RAND MINING METHODS DISCUSSED—II.

THE BUYING AND DISTRIBUTION OF STORES—WITWATERSRAND MINES SPEND 14 MILLIONS ON STORES IN 1921—DOES CENTRALISED BUYING TEND TO STIFLE HEALTHY COMPETITION?—METHODS OF ISSUE DISCUSSED—THE MODDER DEEP'S UNDERGROUND STORE—A BIG FIELD FOR THE PROMOTION OF EFFICIENCY AND ECONOMY.

There is on the Witwatersrand great scope for improvement in the methods adopted with regard to the purchase of stores and mining material and in the efficient and economical distribution of these stores. With the exception of labour there is no aspect of Rand mining which offers such a profitable field for investigation into economic efficiency as does this question of stores.

Fourteen and a Half Millions on Stores.

Last year the gold mining industry of the Transvaal expended nearly fourteen and a half million pounds upon stores. This was the largest amount ever spent by the gold mines on mining machinery, material and foodstuffs, and it is noteworthy that the amount spent on European wages and salaries during the same period was £10,640,969, and on coloured wages just over six million pounds.

In other words, the amount paid by Transvaal gold mines for stores last year was 90 per cent. of the total wages and salaries bill paid to all European and coloured employees of the gold mines. The great bulk of this 14½ millions was spent by the Witwatersrand. The Reef paid £13,940,188, or over 11s. per ton milled, for stores of various kinds last year, and it must, therefore, be obvious that this department of the industry merits the very closest investigation.

Centralised Buying.

There is no implication in this that the mines are buying stores in excess of their requirements. On the contrary, we believe that if anything the mines recently have not been spending enough, and that merchants have allowed their stocks to dwindle almost to vanishing point. There is then no allegation of extravagance on the part of the mines as to the quantities of machinery and supplies purchased, but the questions we here ask are these:—

(1) Has centralised buying strangled competition?

In the opinion of several well-informed critics of the Rand and its methods, buying, like certain other departments has become overcentralised. The whole business is to-day in the hands of the Witwatersrand Commercial Exchange, the Group Buying Departments and the Co-operative Exchange and Timber Yard. In some quarters it is argued that direct buying of certain commodities—and particularly timber—as between the mine and the producer would result in substantial economies and quicker deliveries; that it would stimulate competition and broaden the market generally. Whether this is so or not we cannot definitely say, but we think the point at least merits investigation.

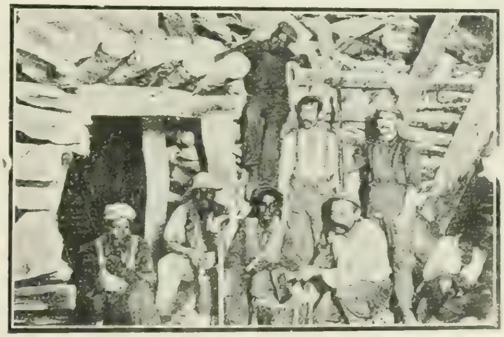
Issue and Distribution of Stores.

The other question which may here be asked is this: (2) Are stores efficiently and economically used, and can methods of distribution, recovery of old material, checking of stores actually given out, consumed and returned be improved? We know that excellent work during the past year or two has been achieved in respect of salving old plant, drills, trucks, shovels, etc. But all the same, it is generally believed that much remains to be done in the directions stated above.

On the Modder Deep, all stores required underground are issued from a store located at the main station. The question of reducing the quantity of stores used drew attention to the following factors:—

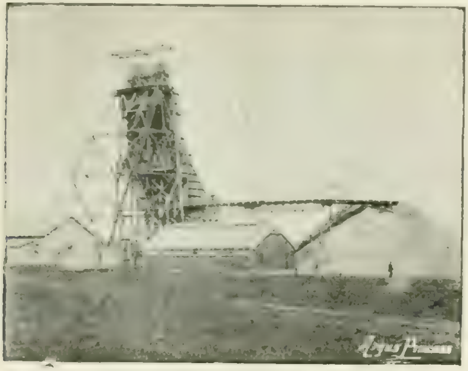
1. Method of issuing.
2. Quantities issued.
3. Recording the issues.

Previous to the introduction of the underground store all requisitions were made out by the men on the surface and initialled by the Mine Captain of the section. In the limited time available before the shift went down it was impossible for the official concerned to inquire closely into the details of the quantities ordered by each individual.


Where the Stores Go Underground in a Rand Mine.

Time and Labour Saved.

Each man went across to the store to draw his supplies. In consequence men were sometimes late in getting down, in any case it was invariably the reason given for missing the cage. To carry his stores over, one or more natives were kept on the surface. Bulky articles were sent down after the shift went down, [illegible] a wait at the station and a possible loss in transit: for instance, a contractor would lose a tin of oil, or a tracklayer a bag of bolts. This is understandable when it is borne in mind that there is only one shaft station at which everything is off-loaded. Many stores were requisitioned for in bulk. It meant making out fewer requisitions, as for instance in case of pipe fittings. In the case of dog spikes, bolts, etc., it was clearly impracticable to weigh out small quantities daily. There was a constant tendency on the part of the workmen to accumulate stores underground. Some men have a mania for doing this, but it became more or less general during the war period. Supplies to the mines were erratic, shortages occurred periodically, and each man, so to speak, tried to see that he was not caught napping. The underground store at the Modder Deep consists of a walled-off portion of the pump chamber, is equipped with racks and cupboards on similar lines to the surface store, with the addition of bins for plugs and wedges. All requisitions are made out by the men underground at whatever time they find it necessary. Only sufficient stores necessary to do the day's work are issued, for instance, bolts, dogspikes, etc., are issued in quantities and not by weight. The store being open from 7 a.m. to 8.30 a.m. and from 12 noon to 1 p.m., any shortage in the morning issue can be made up at noon. The requisitions are initialled by the shift boss, the official directly in charge of the work to be done. The accumulation of stores in the men's boxes is absolutely prohibited. Losses in transit are entirely eliminated. In addition to the ordinary stores a supply is stocked of certain articles made in the workshops. Instead of Mine Captains having these made, perhaps to their own design, and naturally involving a certain amount of delay, they have been standardised and are always available. These comprise such articles as pipehooks, eye bolts, punches, chisels, etc. A constant supply is available of sharpened pinch bars and saws, which are issued in exchange for blunted ones, and not, as in the case of stores, requisitioned for. Spare machines and machine spares are stocked and exchanged, but for obvious reasons, only on presentation of a signed note. Disinfectant previously issued in drums, is stored outside the store in a tank. It is diluted to the correct strength for use and is available at all times day or night. Insertion for pipe joints is supplied in the different sizes required and not in lengths as previously done. Standardisation of stores and fittings is easily enforced by the simple process of stocking only the stores prescribed, for example, no elbows are carried in stock. The Chief Storekeeper's work is considerably simplified. The probable consumption for the month can be fairly accurately estimated, resulting in a large decrease in the item "stores in hand," in his accounts. A conspicuous result of the new method, perhaps not directly connected with the question of the consumption of stores, is the total absence of native labourers on the bank when the shift goes down.



A Scene on the East Rand.

The system adopted on the Modder Deep Mine of issuing stores underground has been eminently successful, and although it is patently true that what is applicable to one mine may not be applicable to another, it may be asked whether there are not several other mines which could profitably adopt underground stores.

The more one considers the immensity of the stores bill of the mines the more clear does it become that the subject merits considerably more attention than is being given to it, and for this reason the questions asked in the foregoing seem to deserve close consideration.

The Busy Man's Page.

WHAT TO READ IN THE TECHNICAL PRESS.

Mining and Metallurgy.

Artificial Pebbles for Tube Milling.—Mining and Scientific Press, March 25, p. 405.

Absorption of Gases during Froth Flotation.—Mining and Scientific Press, March 25, p. 410.

Slate Mining in North Wales, by M. I. Williams-Ellis. —*J. of I. of E.*, April No., p. 170.

Coal.

Washing Coal.—Mining and Scientific Press, March 25, p. 389.

The Constitution of Anthracite.—Iron and Coal Trades Review, April 7, p. 488.

Plant at the Morwell Brown Coal Deposits.—Iron and Coal Trades Review, April 7, p. 491.

Hird Process of Tar Distillation.—Colliery Guardian, April 7, p. 853.

Coke Oven Progress in 1921.—Colliery Guardian, April 7, p. 872.

Coke Oven Practice.—Colliery Guardian, April 7, p. 854.

Low Temperature Carbonization. — Engineer, April 7, p. 382.

Engineering.

A Portable Compressor.—Iron and Coal Trades Review, April 7, p. 492.

Corrosion of Ferrous Metals.—Iron and Coal Trades Review, April 7, p. 494.

A Large Haulage Rope.—Colliery Guardian, April 7, p. 855.

British and American Locomotives.—Engineer, April 7, p. 377.

Utility Arc Welding.—Engineer, April 7, p. 378.

Attachments for Drilling Machines.—Engineer, April 7, p. 395.

Electricity.

A New Design of Change Speed Gear Box.—Colliery Guardian, April 7, p. 857.

Low Grade Coals for Electric Power Generation.—Electrical Review, April 7, p. 477.

Electro-Farming.—Electrical Review, April 7, p. 496.

Iron and Steel.

Open Hearth Furnaces.—Iron and Coal Trades Review, April 7, p. 479.

Economics.

The Real Issue in the General Coal Strike.—Coal Trade Journal, March 29, p. 265.

German Coal Problems.—Iron and Coal Trades Review, April 7, p. 481.

How to Save the Mining Industry.

EFFICIENCY AND ECONOMY SCHEMES—A PLEA FOR ECONOMIC FREEDOM—THE COLOUR BAR AND RATIO PRINCIPLE CONDEMNED—POINTS FROM MR. ERROLL HAY'S COMPREHENSIVE STATEMENT.

Next to the evidence of the Chamber of Mines no more important testimony has yet been given before the Mining Industry Board than that submitted during the week by Mr. Erroll Hay, Technical Adviser of the General Mining and Finance Corporation. Mr Hay was subjected to a searching cross-examination by the members of the Board and by Messrs. Lucas and Crawford, representatives of Labour. His replies went to substantiate and emphasise the statements made in his evidence-in-chief. From Mr. Hay's lengthy and detailed statement we take the following:—

"Of the producing mines of the group during the last quarter of 1921, the Meyer and Charlton made a very substantial profit of 33s. 1d. per ton milled; the Van Ryn Estate made a moderate profit of 3s. 4½d.; and that, of the other four mines, three earned only nominal profits, and one—the Roodepoort United—showed a loss of 6d. per ton milled. Looking at the position from the point of view of the value of the product and cost of producing same, the market value of an ounce of fine gold in December last—the month before the strike—was in the neighbourhood of 95s. 6d. After deducting the cost of freight, insurance and realisation, at say, 6s. 6d. per ounce, the net value of the gold was 94s. per ounce. The normal price of gold is, approximately, 85s. per ounce, which, if we assume that when gold falls to this price the cost of realisation will also drop to pre-War level, would be about 84s. 4½d. net. If the price of gold fell to normal without any corresponding reduction of costs, only one mine—the Meyer and Charlton—would be able to continue working, and that the remaining mines which employed 994 whites, would have to be closed down. Even at the present price of gold, viz., 93s. 6d., or say 92s. net, and under December conditions of costs, the position would be most critical, since three of the mines, employing 596 whites, would be unpayable, while a fourth mine—the Aurora West—would show only a nominal profit, which might disappear at any time. It follows, therefore, that, in the case of this group, the general position of the mines is the cause of grave anxiety, and that nothing but drastic economies and improved efficiency can possibly save the situation

The Ratio System.

Conditions on the Witwatersrand vary so enormously that it would be utterly impracticable to apply any ratio as a whole to the mines. If the principle of adopting a ratio were to be forced upon us, the only logical way in which it could be fixed would be for each individual mine, and, even then, it would have to be altered from month to month to suit varying conditions, such as the proportion of machine stoping (which changes in accordance with the available supply of native labour), the footage of development, and the proportion of ore drawn from reclamation, quite apart from the natural conditions, such as varying stope widths, condition of hanging wall and so on. It will be seen, therefore, that to fix any ratio for the mines would be fundamentally wrong in principle and impossible in practice, and that, in order to obtain the efficiency, which is so necessary at the present time if the bulk of the industry is to be saved from extinction, each mine must be allowed to employ whatever proportion of white and native labour is best suited to the conditions prevailing at the time. Quite apart from this, the principle of forcing the gold mines to employ a fixed proportion of white labour is obviously inequitable and indefensible. Nobody dreams, for instance, of compelling the farmer, the manufacturer, the small mines who are not members of the Chamber of Mines, employers of domestic labour, and so on, to adopt such a ratio, and there can be no reasonable argument for differentiating in the case of the gold mines. Even neglecting the point of view of the mining employers, it would be clearly an error of the first magnitude to adopt a policy of restrictive legislation, particularly in the present critical position of the gold mines. Such a step would unnecessarily burden what, after all, is the principal source of revenue in the country and would merely defeat itself. The result would be that mines would have to close down, which might otherwise have been able to continue operations, and provide, not only direct employment for white labour, but also, what is even more important, be the indirect cause of supporting a large population in the country.

Efficiency Measures.

Regarding efficiency, Mr. Hay says:—"Turning to the question of the methods which should be adopted by the Industry to promote efficiency, the field for an improvement in this direction is, without doubt, enormous, and the desired results unquestionably can be obtained, provided that we are afforded facilities by the Government and the trades unions for doing so: Among our most important requirements are the following—(a) Removal of the colour bar; (b) removal of trades unions' restrictions and interference with discipline; (c) the provision of an adequate native labour supply; (d) the avoidance of continual changes among the men employed by the mines; (e) more efficient supervision; (f) the adoption of the 'no cost' contract; (g) the provision of an incentive for day's pay men to assist the contractors in their work; (h) the lengthening of the Saturday shift to 8 instead of 7 hours; (i) the adoption of quarterly returns in place of the monthly returns now in vogue."

The Colour Bar.

Mr. Hay makes out a strong case for the removal of the colour bar, and he quotes a large volume of evidence in support of his opinion. He concludes:—"If all these statements are correct, and there seems no reason for disbelieving such a general consensus of opinion, then, surely, there can be no possible excuse for retaining on the Statute Book regulations which handicap the organisation of the mines, are a serious source of inefficiency, do not serve the purpose for which they were primarily designed, and which act merely as a growing and serious cause of discontent and irritation to the native population."

Classification of Mines.

The proposal to classify the mines according to their grade, and to employ different ratios of whites in the various grades, Mr. Hay says, is on a par with other proposals which have been made to relieve the Low Grade Mines of taxation and increase the burden of the High Grade Mines to make up the deficiency. It is a suggestion, in other words, to penalise the rich mines merely because they are rich, a proposal which, apart from its immorality, would be bound to defeat itself.

GOVERNMENT EXAMINATIONS.
METAL. RESULTS, 1921. COAL.
Total METAL MANAGERS Certificates
Granted in S.A., 1921 36
Secured by Students of Messrs. LUCAS & WOLFE .. 21
Balance for S.A. 15
7 COAL MANAGERS Certificates obtained in 1921.
Total OVERSEERS Certificates (Metal and Coal)
Granted in S.A., 1921 61
Secured by Students of Messrs. LUCAS & WOLFE .. 25
Balance for S.A. 36
Total SURVEY Certificates
Granted in S.A., 1921 11
Secured by Students of Messrs. LUCAS & WOLFE .. 9
Balance for S.A. 2
C. D. LUCAS & B. E. WOLFE,
MINING ENGINEERS.
OFFICES & LECTURE ROOMS: PERMANENT BUILDINGS.
Postal Address: Box 6301. JOHANNESBURG

Mining Economics.

Mr. Hay concludes as follows:—"Mining at best is a risky undertaking, and it is only through there being a few prizes occasionally that the investor is tempted to put his money into the industry at all. If he were satisfied with 5 per cent. or 6 per cent. on his outlay, he could get that return in Government Bonds, and it follows, therefore, that there must be a gambling chance that the mine will turn out well, and that he will thereby substantially increase his capital, before he will put his money into a mining venture. The gambling chance exists in the fact that this, occasionally, has proved to be the case, otherwise, many of the mines on the Rand, which are now providing direct employment for thousands of whites and are a source of considerable revenue to the State, never would have been opened. If we are desirous of obtaining money in future to exploit the mineral wealth of the country, we must show the investor that he still has a chance of increasing his capital. This would not be the case if the rich mines were unfairly taxed, merely because they were rich, and the effect would be that we should frighten the investor away, with the inevitable result that mining in this country would become a derelict industry. One hears frequent comments by representatives of the workmen that certain mines are paying enormous dividends and that the return is out of all proportion to the capital invested. Let us not forget three points. Firstly, that, in several instances, the shares were issued at a high premium, secondly, the likelihood is that the present-day holder of the shares paid considerably more than par value for them, and, thirdly, that the fact of our working a very large number of low grade mines to-day, from which the shareholders derive no benefit whatever, is directly due to the good results which have been obtained from certain of the high grade mines. To attempt to get money for opening up a mine, when no other mines in the district had been successful, would be futile. It follows, therefore, that while the low grade mines are a most valuable asset to the country, and should be kept going if at all possible, nothing should be done to interfere with the prosperity of the mines, which, to-day, are high grade, but which, to-morrow, if restrictive legislation and undue taxation are indulged in, may rapidly be transferred to the former category. It is only by the avoidance of such a policy that the industry will be able to avert the calamity which threatens it at present, and that the country will maintain its existing white population, quite apart from the increase in that direction which we all desire."

Far East Rand State Leases.

POINTS FROM GOVERNMENT INSPECTOR'S REPORTS ON STATE MINES, BRAKPAN, SPRINGS AND WEST SPRINGS.

GOVERNMENT GOLD MINING AREAS.

The report for the year ended the 31st December, 1921, states, *inter alia*:—

Ore Reserves.

The payable ore reserves estimated by the company as at the 31st December, 1921, amount to 10,232,000 tons of an average value of 8·5 dwt. over an average stoping width of 77 inches. Compared with the last estimate as at the 31st December, 1920, this is a decrease of 59,000 tons, but the average value has increased from 8·2 dwt. to 8·5 dwt., while the average stoping width remains the same. The full details of the reserves are not yet in my possession.

Development.

Taking the mine development as a whole the total footage slightly exceeds that of the previous year, but the proportion on reef that was sampled was 3,470 feet less. This is chiefly due to the main haulages now being driven in the footwall, which entails an increased amount of cross-cutting to tap the reef, this latter class of work having increased by 5,487 feet compared with the previous year.

The percentages of rock broken at the different shafts were in close approximation to those of the previous year. The average value and width of ore mined from the payable ore reserves, according to data adopted in the estimation of reserves as at the 31st December, 1920, were 8·11 dwt. over 78 inches, while the payable reserves as a whole at that date averaged 8·19 dwt. over 76·5 inches, showing that the value of the ore mined approximated closely to the value of the total reserves. The face sampling value of the ore mined in the payable reserves was 52 inch pennyweights higher than the corresponding estimated block value, an increase of about 8 per cent. During the previous year the face sampling value was about 4 per cent. less than the corresponding block value. Making a comparison of these values over the last three years, it is found that the average mine sampling value of the ore has been 8 inch pennyweights, or approximately 1¼ per cent. higher than that estimated, which points to accurate and reliable estimation of the value of the reserves. The average stoping width throughout the mine was 1 inch greater than that estimated to be carried, but the reef channel increased in width by 3 inches, so that the external waste mined, estimated at 29 inches, was reduced by 2 inches.

A considerable area of the worked-out portions of stopes has been swept and washed, and the reef recovered from the packs. Altogether an area of over 36,000 fathoms has been dealt with during the year, yielding 177,995 tons of an average value of 9·6 dwt. Certain improvements have taken place during the year in connection with the transportation of the ore underground, the 15th level of the north-west shaft, the 21st haulage west of the south-west shaft, and the 24th haulage of the south-east shaft having been converted into electric locomotive haulages. The service pumping station at the bottom of the south-west shaft came into operation during the year. It is equipped with three electrically driven centrifugal pumps, each of a capacity of 15,000 gallons per hour. These pumps supply the service water for the mine below the 14th level.

Ventilation.

To improve the mine ventilation in the southern portion of the mine a fan, having a capacity of about 250,000 cubic feet per minute, was installed at the bottom of the No. 4 shaft, and that shaft, formerly a downcast, was converted into an upcast. This fan came into operation in July and, although the conditions were improved, it was obvious that to meet the requirements of the continually increasing area of the mine, the present scheme of ventilation would require to be reconsidered. It has therefore been decided to sink another shaft for ventilating purposes only. The position of this shaft has been located and preliminary work commenced. It is to be a circular shaft 22 feet in diameter, and will be sunk more or less central to the four existing shafts, and will strike the reef in the vicinity of the 20th level. It is intended to line out the shaft with concrete throughout its depth, which will be some 3,460 feet. The necessary boilers are in course of erection, and the foundations for the winding engines are in hand. A sinking headgear has been erected, and the first few feet of the shaft will be sunk and the collar built up by means of a temporary air-driven winch, and by the time this preliminary work is finished the permanent sinking plant should be in commission. The foul air in the mine will be exhausted by means of a double inlet sirocco fan having a capacity of 750,000 cubic feet per minute; the four existing shafts will then become downcast.

Compared with the previous year, there was a slight increase of 0·048 shillings per ton milled in the reduction expenses.

Government's Share of Profits.

The share of the annual net profit for the year payable to the Government under Clause 11 of the lease is estimated at £896,180. The expenditure for the year has been examined by myself and an official of the Inland Revenue Department with regard to its correct allocation in terms of the Profits Tax (Gold Mines) Proclamation 1902.

BRAKPAN MINES.

The report for the year ended the 31st December, 1921, has the following, *inter alia* —

It will be noted that commencing on the 1st January, 1922, the Government will receive its share of the profits in terms of Clause (a) (ii). The formula on which the Government's share of the profits will be based is: $y = 50 - \frac{1150}{x}$ where x is the ratio of profits to recovery expressed as a percentage, and y is the percentage of profits payable to Government. In order that over-mining should not take place during the period of five years when the Government is paid only five per cent. of the profits, Clause 11 of the lease lays down the amount of gold that may be won without surcharge. Up to the end of the five years' period, this amount, known as "desired recovery," was 1,513,116 ounces, whereas the mine produced 1,318,313 ounces. Under Clause 8 of the lease, the five per cent. of the annual profits due to the Government for the year 1921 amounts to £24,168 9s., making a total of £102,163 7s. received by the Government since the commencement of the lease.

Ore Reserves.

The payable ore reserves as at the 31st December, 1921, are estimated by the company at 2,423,230 tons, valued at 8·61 dwt. over a stoping width of 68·13 inches. This is a decrease of 126,395 tons compared with the previous estimate as at the 30th June. At the date of closing this report the details of the reserves are not yet in my possession, and any remarks concerning them will appear in my next report. The ore reserves are estimated half-yearly, and the following table shows the last three estimations, the pay limit adopted being 5 dwt. over 50 inches:—

	Tons.	Value dwt.	Width inches.
At 31st December, 1920	2,526,517	8·88	70
At 30th June, 1921 ...	2,549,625	8·77	70
At 31st December, 1921	2,423,230	8·61	68

The further exploration of the area in the western section of the mine between the No. 18 haulage and the No. 21 drive still gives disappointing results, and it would now appear that this area is likely to prove for the most part unpayable.

The gold placed to reserve during the year, amounting to 19,116 ounces, and valued at £100,619 12s. 8d., has now been taken to credit, and is included in the revenue from gold. Of the revenue from gold, the sum of £295,185 3s. 4d. represents the amount of the premium, being at the rate of 20s. 8·4d. per ounce, and equivalent to 8s. 11·373d. per ton milled. This represents a decrease of practically 7s. 7d. per ounce, and 3s. 0·923d. per ton milled, compared with the previous year. Compared with the previous year, the total working costs show a decrease of 2s. 9·913d. per ton milled, of which 2s. 1·453d. is under the head of "mining." Compared with the previous year, the working profit shows a decrease of 3·302d. per ton milled, but excluding the gold premium in both instances, the working profit shows an increase of 2s. 9·621d. per ton milled.

Government's Share of Profits.

The share of the net profit for the year payable to Government under Clause 8 of the lease amounts to £24,168 9s. For the previous year the amount was £23,416 8s. The expenditure for the year has been examined by myself and an official of the Inland Revenue Department with regard to its correct allocation as between working and capital expenditure, in terms of the Mining Taxation Act, 1910.

SPRINGS MINES.

The report for the year ended 31st December, 1921, has the following, *inter alia* —

Ore Reserves.

The payable ore reserves as at the 31st December, 1921, are estimated by the company at 3,056,231 tons valued at 8·92 dwt., over a stoping width of 61·54 inches. This is an increase of 53,250 tons compared with the previous estimate as at the 30th June last, and a total increase of 330,053 tons for the twelve months. At the date of closing this report the details of the reserves are not yet in my possession, and any remarks concerning them will appear in my next report. The ore reserves are estimated half-yearly, and the following table shows the last three estimations, the pay limit adopted being 5 dwt. over 55 inches:—

	Tons.	Value dwt.	Width inches.
At 31st December, 1920	2,726,178	8·76	63·48
At 30th June, 1921 ...	3,002,981	8·76	62·53
At 31st December, 1921	3,056,231	8·92	61·54

The total development for the year shows an increase of 4,501 feet compared with that of the previous year. The footage sampled shows an increase of 3,480 feet, and the percentage payable has decreased from 57 per cent. to 54 per cent., but the average value has increased from 581 inch dwt. to 652 inch dwt.

Two additional direct airways on the eastern and western sides of the mine respectively have been opened up during the year between the Nos. 1 and 3 shafts. These will allow of fresh downcast air being led to a number of individual stopes, and will greatly improve the working conditions. The ground opened up by the 4 L. haulage being driven in a south-westerly direction from the No. 3 shaft has disclosed payable ground of a very fair average value. Of the 1,081 feet traversed, 740 feet on reef were sampled, of which 63 per cent. was payable, averaging in value 557 inch dwt.

From the figures it will be seen that the block value of the ore mined in the payable reserves over the year approximated closely to the value of the reserves as a whole, the actual face sampling value of the ore mined in these reserves averaged 45 inch dwt. higher than the block value. A very satisfactory reduction has been made in the average stoping width during the year, as this width has been reduced by five inches compared with the previous year, although the channel width has remained practically the same. The actual external waste width mined in the payable ore reserves averaged 3¼ inches less than the width estimated to be carried. Of the total tonnage broken in stopes about 94 per cent. was broken by machines. Owing to increased facilities for transporting rock and increased storage capacity at the No. 2 shaft station bins, and also to additional trucks brought into use underground the mine has been able to keep the mill fully supplied throughout the year.

The total working costs per ton milled compared with the previous year show a decrease of 1s. 5·737d. Compared with the previous year the total working profit shows a decrease of 2s. 4·975d. per ton milled, but excluding the gold premium in both instances the working profit shows an increase of 9·805d. per ton milled.

Government's Share of Profits.

The share of the net profit for the year payable to Government under Clause 9 of the lease amounts to £15,641 8s. For the previous year the amount was £16,406 3s.

WEST SPRINGS.

The report for the year ended the 31st December, 1921, has the following, *inter alia* —

No. 1 shaft: The footage sunk during the year amounted to 681 feet and the footage timbered to 705 feet, the total and finished depth of the shaft being 4,105 feet. The Main Reef Leader was struck in March, the contact with the [illegible] footwall being at a depth of [illegible] feet. The reef proving to be of comparatively [illegible] width, the reef [illegible] being [illegible]. Sampling taken over this width at [illegible] the values to be low, the average being 2·[illegible] dwt. A double 14-[illegible] was constructed at a depth of [illegible]. The main station was cut at a depth of [illegible] feet and [illegible] feet of station [illegible] and crosscuts driven, which are not included in the development footage.

No. 2 Shaft.—The footage sunk during the year amounted to [illegible] feet and the footage diamond drilled to [illegible] feet; the total depth of the shaft being 2,940 feet, of which 2,917 feet are timbered. A pumping station was cut at a depth of 2,1[illegible] feet. Various reefs of the Kimberley Series were intersected during the year's sinking, their depths, widths, and values being as follows:—At 2,485 ft., 0·2 dwt. over 14 in.; at 2,500 ft., 0·6 dwt. over 25 in.; at 2,590 ft., 0·6 dwt. over 49 in.; at 2,680 ft., 0·3 dwt. over 29 in.; at 2,784 ft., trace over 61 in. In June the company notified the Government that it was resolved temporarily to suspend sinking operations in this shaft. At the end of May the shaft had been sunk 2,890 feet without encountering the Kimberley Shales, it being then more than 700 feet below the point at which the shales were expected. This indicated considerable faulting and a much greater depth of shaft, involving larger expenditure than was originally calculated. Sinking operations were stopped in June and boring commenced from the shaft bottom with a diamond drill to locate the shales and amygdaloidal diabase. The depth to which the hole was sunk was 1,058 feet or 4,004 feet below the shaft collar. The drill located the shales at a depth of 3,222 feet and the amygdaloidal diabase at a depth of 3,958 feet. If the depth at which the reef is likely to be encountered is based relatively to the depths of the amygdaloidal diabase and the reef of the No. 1 shaft then this depth should be about 4,800 feet. This makes the reef about 800 feet below the depth at which it was originally estimated to be encountered. In the course of diamond drilling, three bodies of reef were passed through, their depths, values, and widths being:—At 2,941 ft., trace over 8 in.; at 3,044 ft., trace over 38 in.; at 3,085 ft., 0·3 dwt. over 381 in. At the present moment the company does not propose recommencing sinking operations, as it is deemed advisable and more profitable to conserve the available cash resources and concentrate operations on the development of the No. 1 shaft area with a view of opening up as large a tonnage of ore as possible, and this action taken by the company has met with the approval of the Government.

Compared with the previous year, the payable percentage of the footage sampled from the Springs Mines property has increased from 28·4 per cent. to 42·6 per cent. and the value from 327 inch dwt. to 469 inch dwt. From the West Springs shaft four main haulages are advancing in an easterly, north-westerly, northerly, and westerly direction respectively. The east haulage at the end of the year was within a few feet of connecting with the heading from the Springs Mines property, and this connection has since been made, so that now there is through underground communication between the two properties. Of the total footage accomplished from the West Springs shaft, amounting to 4,209 feet, 695 feet were in connection with the station lay-out, and this footage was practically all off reef. Owing to necessary grading to pick up the reef and also to the presence of faults, in only about fifty per cent. of the footage driven in the four main haulages was the reef exposed. In June a second heading from the Springs Mines' boundary, known as the eighth haulage, crossed that company's boundary and entered the West Springs area. It is approximately 2,600 feet to the north of the main east haulage now connecting the two properties. This haulage was in payable ground almost up to the point of crossing the boundary, but unfortunately the values have been below the pay limit where the reef has been exposed in the West Springs area. It, however, points to the presence of a payable shoot of ore traversing the property in a north-westerly-south-easterly direction to the north of this haulage, which at the end of the year had been driven 575 feet in the West Springs area.

THE LATE JOHN BALLOT

[illegible] the death in New York of Mr. John Ballot, who for many years was one of the most remarkable figures in Rand mining, and whose success in the sphere of world industry constitutes one of the industrial romances of our time. The late Mr. Ballot arrived on these fields among the very first, and was one of the pioneers of the faith in the banket that proved so well founded. He was born at George, Cape Colony, 64 or 65 years ago, of Dutch parents, his grandfather having been a Dutch clergyman from Holland, who married into the well-known Robertson family of that district. He left school when 16 years of age—having been a contemporary of the well-known medico, Dr. John van Niekerk—to join his uncle at Rolfontein, Eastern Transvaal, the late Mr. Alick Robertson, father of the Administrator. There he engaged in commercial and farming pursuits for a year or two, but early in life he developed a taste for scientific pursuits and became a keen student of geology and astronomy. At Barberton and the Komati goldfields his general geological knowledge stood him in good stead in many mining enterprises. Later he was engaged in post cart contracts with his cousin (the present Administrator) and Mr. Harry Marshall, and other well-known Transvaalers of that day. He came to Johannesburg in 1886 or 1887 and from the first took a leading part in the keen geological discussion of those days. Under the *nom de plume* of "Jones Beta" he was a regular contributor of the daily press of the period. His pamphlet on Rand Geology, published in 1888, has stood the test of time and was a remarkable production for a young and, in this science, self-taught man, on what was thought at that time to be a very difficult and obscure subject. While others high up in the mining world expressed, to say the least of it, guarded opinions about the nature of the banket deposits and their permanence, he never wavered in his opinion that a sedimentary gold-carrying deposit proved over such a great area in length must go down and carry gold in depth. In 1888 he formed a company to import the first diamond drill, and he combined with diamond drilling the holding of a double row of claims (these being the first and second rows next the Stanhope Company). This company was known as the Globe Diamond Drilling and Prospecting Syndicate. Owing to the non-arrival of an important piece of plant, drilling was never undertaken, but a company was formed to work the ground known as the Stanhope-Geldenhuis "Deep Level" G.M. Company. The south reef was cut in this property at a depth of 125 feet. Associated with him in both enterprises were a number of gentlemen still to the fore, namely, Messrs. S. J. Wilks, A. Mackie Niven, Geo. Jones, and Frank Churchill (now Senator). Mr. Ballot was associated with the late Mr. W. Y. Campbell, the late Mr. Herman Eckstein and others in forming the Chamber of Mines, as it is constituted to-day, and was a member of the executive of that body for a number of years. Some 25 years ago he took up his residence in London. With the late Mr. James Hay, Mr. W. W. Webster, a well-known Randite and old Barbertonian, Dr. Gregory, Mr. Francis Gibbs, Mr. H. Livingstone Sulman, and Mr. Hugh K. Picard, he became interested in Minerals Separation, Ltd., which has become one of the most successful and largest corporations in either hemisphere. The success of the ore concentration processes perfected by this company is well known, and as chairman and managing director he was mainly responsible for this, it may indeed be said to have been his life-work. The success of the process has been particularly marked in connection with the treatment of sulphide copper ores, large American copper companies having added millions per annum to their profits in treatment of tailings. It did for copper what the cyanide process has done for gold mining. A few years ago the Minerals Separation (North America) Corporation, Limited, was formed, to look after the interests of the corporation in the United States, and at the request of his fellow-directors, Mr. Ballot became president and took up his residence in New York.

What the Mines Bought in 1921.

TOTAL EXPENDITURE OF £17,558,858—GOLD MINES' RECORD OUTLAY OF £14,439,837—COMPARISONS WITH PREVIOUS YEARS.

The following figures are taken from the official returns of the Mines Department.

	Total	
Classification	Weight or Quantity	Value £
Bags, value	—	11,254
Belting (including Laces and Fasteners), value	—	190,897
Boiler Fluid, value	—	2,803
Bricks, value	—	55,026
Brushware, value	—	18,537
Buckets, value		7,197
Building Material (Ceilings, Flooring, Doors, Windows, etc.), value	—	120,283
Candles, lb.	7,738,806	369,065
Carbide, lb.	5,323,938	117,143
Castings—		
(a) Brass, value		46,291
(b) Iron, value	—	173,999
Cement—		
(a) Bags, number	262,880	99,904
(b) Casks, number	150	311
Charcoal, value		3,003
Chemicals, Assay, and Smelting Requisites, value		135,225
Cloth, Canvas, Blanketing, Matting, etc., value	—	47,738
Clothing, Boots, and Leggings (excluding issues on repayment), value	—	8,485
Coal-cutting Machines, number	85	27,118
Coal-cutting Machine Spares, value	—	24,628
Coal—(a) Smithy, tons	21,010	33,060
(b) Steam, tons	1,670,633	1,031,481
(c) Other, tons	88,695	53,479
(d) Duff and Dross, tons	318,162	93,829
Coke, tons	4,486	12,266
Compressed Air (purchased), value	—	411,334
Concrete Pipes, Blocks, etc., value	—	17,482
Cyanide, lb.	6,211,726	114,801
Disinfectants, value	—	21,692
Electrical Machinery (as detailed in Annexure "D"), value		521,554
Electrical Machinery Spares and Fittings, value		159,395
Electric Power and Light (purchased), value	—	1,382,534
Explosives—		
(a) Blasting Gelatine, cases	39,671	112,393
(b) Gelignite and Gelatine Dynamite, cases	530,629	1,346,195
(c) Dynamite and Ligdyn, cases	55,190	110,982
(d) Other Explosives, cases	11,127	28,559
(e) Detonators, value	—	80,612
(f) Electric Detonators (or Electric Fuses), value		19,191
(g) Safety Fuse, value		294,868
(h) Lighting Torches (Tys Sticks), value		13,128
Fencing and Wire Netting, value	—	8,013
Fodder for Stables—		
Bran, Chaff, Mealies, Forage, etc., value	—	58,945
Foods, etc. (supplied free to Coloured Labourers)—		
(a) Beans, lb.	9,598,913	51,759
(b) Dholl, lb.	153,236	2,684
(c) Rice, lb.	2,184,878	30,324
(d) Meal (Mealie, Kafir Corn, etc.), bags	791,152	712,589
(e) Malt and Cereals for Beer, value		10,636
(f) Meat, lb.	39,182,774	653,938
(g) Fish, lb.	234,037	4,015
(h) Salt, bags	11,003	4,618
(i) Groceries, Coffee, Sugar, Oil, Ghee, Molasses, etc., value		85,093
(j) Sundry Food, including Bread, value	—	235,627
(k) Vegetables, value		89,795
Foundry Requisites, value	—	3,896
Hand Tools (Picks, Shovels, Hammers, etc.), value		180,133
Hose Fittings, value	—	33,987
Hosing (Steam, Suction, Rock-drill, etc.), value		100,657
Hospital and Ambulance Requisites (including Medicines), value	—	61,360
Iron—(a) Bar and Angle, lb.	6,854,976	113,381
(b) Galvanised, value	—	43,619
(c) Sheet, lb.	181,223	3,525
(d) Pig, lb.	365,040	3,770
Ironmongery—		
(a) Bolts, Nuts, Washers, and Rivets, lb.	3,680,626	113,155
(b) Screws and Nails, value	—	31,640
(c) Locks, Hinges, Staples, Chains, etc., value	—	21,764
(d) Other, value	—	12,941
Lamps and Spares, value	—	21,694
Lead—(a) Pig, lb.	208,816	3,944
(b) Sheet, lb.	17,257	780
Lime—(a) White, bags	530,493	143,185
(b) Blue, bags	24,615	6,117
Lubricants—(a) Oils, gallons	678,804	197,714
(b) Grease and Tallows, value	—	149,435
Machinery and Machine Tools (as detailed in Annexure "D"), value	—	811,916
Machinery Spares, other than electrical, value		370,620
Mercury, bottles	2,365	41,097
Metals (anti-friction), value	—	29,606
Motor-cars and Accessories, value	—	28,944

MINES DEPT. EXAMS.

CERTIFICATES AWARDED INSTITUTE.

MANAGERS' EXAMS., September, 1921, January, 1922.

We obtained 15 out of a total 22 certificates awarded in South Africa

	Metal	Coal	Totals
Ours	9	6	15
Rest of S.A.	4	3	7
		Total for S.A.	22

OVERSEERS' CERTIFICATES (Metal).

So far as we know we have only had 6 failures during 1921, and secured two-thirds of the certificates issued in S.A. during the past two years.

TUITION (Metal or Coal) by class, correspondence or privately

Mining Institute (Prof. Yates),

St. James' Mansions, Eloff St. Johannesburg

Classification	Total Weight or Quantity	Value £
Oils other than Lubricating—		
(a) Transformer, gallons	14,154	1,095
(b) Other, gallons	34,130	11,113
Oilskin Suits and Gumboots, value	—	31,011
Packing, value	—	57,120
Paint, Oils, Driers, etc., value	—	39,014
Paraffin, cases	24,433	30,899
Petrol, cases	21,913	12,336
Pipes and Pipe Fittings, value	—	625,866
Rails, Crossings, Sleepers, etc., value	—	130,043
Rock-drills, number	1,584	71,250
Rock-drill Spares, value	—	101,183
Ropes—(a) Wire, value	—	339,197
(b) Vegetable Fibre, value	—	12,397
Sand and Stone, value	—	13,817
Screening, value	—	29,747
Shoes and Dies, lb.	11,140,660	174,919
Skips, Cages, Kibbles, and Spares, value	—	25,783
Soap, lb.	603,121	16,487
Soda, lb.	1,176,007	10,449
Stable Requisites, value	—	11,056
Stationery and Printing, value	—	98,519
Steel—(a) Bar, Tool, Cast, etc., lb.	2,065,997	49,590
(b) Sheet, lb.	9,598,820	145,989
(c) Hand-drill, lb.	3,275,614	62 941
(d) Rock-drill, lb.	7,180,453	327,496
(e) Other, lb.	2,023,024	31,063
Tamping (Plugs, paper, etc.), value	—	8,350
Timber—(a) Deals, value	—	124,215
(b) Oregon, Pitch Pine, etc., value	—	325,533
(c) Mining Poles and Lagging, value	—	609,675
(d) Other, value	—	87,861
Transport, Railage, etc., value	—	103,080
Tube Mill Requisites—		
(a) Pebbles and Flints, value		341
(b) Liners, value	—	74,650
(c) Other, value	—	15,920
Trucks and Spares, value	—	279,356
Waste, value	—	14,809
Water (purchased), value	—	187,792
Wood Fuel, value	—	15,159
Zinc and Zinc Discs, lb.	4,841,438	166,568
Sundry Articles not specified above, value	—	249,989
Total Value	—	17,499,756

ASBESTOS
PROPERTIES and FIBRE
ARE PURCHASED BY
AFRICAN ASBESTOS MINING CO., LTD.
P.O. Box 504, BULAWAYO
Telegrams: "Safasco," Bulawayo 'Phone No. 356
Johannesburg Correspondents:—HUGGINS & CO., LTD.
Consolidated Building JOHANNESBURG
Telegrams: "Turbros" P.O. Box 5185 'Phone 574

Value of Stores Consumed—Union of South Africa.

	Gold Mining Industry	Diamond Mines	Coal Mines	Base Mineral Mines	Total
	£	£	£	£	£
1921	14,439,837	917,268	1,854,205	347,548	17,558,858
1920	14,363,651	1,483,284	1,597,376	398,999	17,843,310
1919	13,208,449	1,058,050	1,301,570	333,207	15,901,276

Machinery.

From a detailed statement of "Machinery and Machine Tools" and "Electrical Machinery," year 1921, we take the following:—

Classification.	Total.
Machinery and Machine Tools.	£
Water Purifiers	771
Boiler Plant, other than that of Locomotives, Traction Engines, or Steam Wagons	94,478
Headgear	84,920
Steam Engines—	
(a) For Winding	50,363
(b) For Pumping, including Pumps if directly driven	1,904
(c) For Compressors, including Compressors	18,400
(d) For Generating Electricity	14,837
(e) For other purposes	1,353
Pumps—	
(a) Air-driven	6,809
(b) Driven indirectly by Steam	3,326
(c) Driven indirectly by Electric Motors	28,191
(d) Driven indirectly by Gas or Oil Ongine	159
Steam Locomotives	9,129
Traction Engines	
Steam Lorries	
Motor Wagons	
(a) Electric	
(b) Oil	315
Gas or Oil Enignes	11,710
Mechanical Lifts and Elevators other than Belt Conveyors and Elevators	6,853
Belt Conveyors and Elevators	7,974
Other Mechanical Haulage	13,802
Reduction Plant, excluding Engines and Consumable Stores, such as Shoes and Dies, Screenings, etc.	61,655
Washing Plant	16,018
Treatment Plant, including Furnaces	10,668
Workshops Plant, excluding Engines and Motors	14,658
Mine Ventilation Plant, excluding Engines, Compressors, and Motors	18,915
Diamond Drills (property of company)	177
Miscellaneous Machinery not particularised above	304,233
Total value [shown under the Heading "Machinery and Machine Tools" (Stores Consumed)	£811,916

Electrical Machinery, including Fittings for Power and Lighting.

Electric Generators and Engines driving same if directly driven	38,713
Electric Hoists, including Motors	98,832
Electric Locomotives	34,589
Electric Motors driving Pumps, including Pumps if directly driven	52,901
Electric Motors not included above	63,409
Power Lines, Transformers, etc.	152,863
Electric Bells, Telephones, and other Fixtures	33,383
Miscellaneous Machinery not particularised above	49,864
Total value [shown under the heading "Electrical Machinery" (Stores Consumed)	£524,554

ANSWERS TO CORRESPONDENTS.

T. Holdsworth (Ndanga, Victoria).—We do not think the shares have any value.

Iridium in Southern Africa.

DISCOVERIES ON THE FAR EAST RAND AND IN THE HEIDELBERG DISTRICT—THE PLATINUM GROUP.

(By a Correspondent).

Every prospector and most miners know something about gold, and to a lesser extent also about silver. A very few can differentiate platinum in the presence of ilmenite, and there in most cases men's knowledge of the precious metals ceases. This fact is to be deplored, because the lack of the necessary knowledge to detect the presence of metals associated with gold in rocks has led in the past, and will doubtless lead in the future, to the closing down of mines which, while unpayable on a purely gold basis, are payable if worked as a gold plus other metals proposition.

Rhodesia's Complex Ores.

Rhodesians are very much ahead of some men in their metallurgical practice, and the presence of base metals, such as antimony, arsenic, copper, etc., in the gold-bearing ores of that country have not debarred mining men from dealing successfully with the refractory gold ores. One recalls at once the Falcon, a gold and copper mine, the Cam and Motor, a gold and antimony proposition, and the Eileen Alannah, a gold and arsenical pyrites mine, all of which have been successfully worked and have given high recovery values of their gold contents. When, however, we come to deal with the supposed simple gold ores, the lack of technical training is more apparent, and one wonders what the yearly loss in the precious metals of the platinum group may be estimated at. There is no return made either in the Union or Rhodesia of the recovery value of precious metals other than gold and silver, and the assumption, more or less warranted, is either that the contents of the ores other than gold are too insignificant to merit extraction, or that the mines are ignorant of the valuable product which is thrown aside as of no further use. Most men who deal with metallurgical operations here classify the output as consisting of gold, a little silver and "black sands." These latter are considered to be mainly iron pyrites or magnetic iron ore, and are usually ground up with mercury in an amalgam barrel in order to obtain whatever gold they may yield with fine grinding. A few small properties roast their black sands in order to reduce the sulphur, and so convert the iron into an oxide and thereafter catch the now free gold with mercury in the amalgam barrel. In all cases, however, no definite or regular effort is put forth to test the black sands for the presence of metals of value other than gold or silver, and therein lies the *raison d'etre* of this article. There is no doubt but that the sand banket does contain appreciable quantities of the metals of the platinum group, i.e., platinum, osmium, iridium, rhodium, and palladium.

Iridium on the Far East Rand.

Dealing only with the metals osmium and iridium, they are most frequently found in intimate association in rocks and ore known as osmiridium. If one remembers the accepted theory of the genesis of the banket reefs of the Rand and elsewhere, that the gold contents of the ore bodies were introduced into a matrix of sand, etc., the detritus of a river-bed, or of lecustrine, or deltaic formation, one need not be surprised to find that, while no definite reefs or ore bodies of the platinum group have so far been discovered, and probably never will be discovered, the breaking down of rocks containing minute traces of these metals and their subsequent concentration by water action and other agencies has resulted in the aggregation of the particles to an extent which has made it possible to dissociate them from the gold itself, and to make it profitable to the mine-owner to concentrate the product sufficiently to sell the concentrate of osmiridium overseas to the smelters at a good figure. One read recently of a certain gold mine, the Modder Deep G.M. Co. (forwarding 200 oz. of iridium to London through the local banks. As the market price for this metal is over £10 an ounce this meant an addition of over £2,000 to the profits of that particular property. The Rand practice is to make the gold bullion as pure as possible, the presence of any other metal is a source of annoyance to the buyers, and although most gold bars contain a little iridium, no allowance for this is made by the bank.

This is, indeed, a sore point with the mines, since, although the banks get paid themselves for the iridium contents of the bars, they refuse any allowance to the mine-owners. One, therefore, does not wonder that the mines are not unduly anxious to leave iridium in their bullion On the other hand, it ought surely to be well worth while concentrating their "black sands" and treating these for the metals. Osmiridium is a separate and valuable by-product. While one would not go so far as to say that the result would make all the difference between a profit and loss on the running of some low grade mines, there is no room for doubt as to the additional value being of importance to such properties, and, in any case, it ought to be recovered as additional profit. Iridium has recently become of importance in the case of some outside properties which, after lying dormant for many years as unprofitable gold-producers, are now being worked for the iridium contents.

OSBORN'S
"TITAN"
MANGANESE
STEEL CASTINGS
FOR
ROTARY AND JAW CRUSHERS,
MORTAR BOX LINERS, ETC.,
AND FOR ALL PARTS SUBJECT
TO SEVERE ABRASION.
GET THE ABSOLUTE BEST
AT NO EXTRA COST.
FROM
SAMUEL OSBORN
(S.A.), LTD.
BOX 3162 PHONE 4673
JOHANNESBURG
WORKS: CLYDE STEEL WORKS, SHEFFIELD.

Iridium in the Heidelberg District.

Two such mines are actually at work nearly in the Heidelberg district. In one case the osmium occurs in sufficiently large quantities as to make it the chief profit producer. The owner alleges that he obtained 4 oz. of iridium per ton of ore crushed, i.e., £40 per ton, which is extremely doubtful. In the second case, the stuff treated gives over 12 oz. per ton, and this is correct; but here the iridium is derived as a concentrate of a concentrate, in that it is a recovery value from the further treatment of an old battery site, and it is only natural to expect a high recovery under such circumstances. The point to be emphasised is, however, that each of these properties is worked for iridium as the chief product, the gold contents being a secondary consideration of the owners. The writer has recently visited one property, and is satisfied that the concern is a payable proposition and the purpose of this article is to make known the possibilities which exist in the banket reefs of South Africa for the recovery of payable precious metals other than gold. The presence of the metal iridium in the orebody may be detected by its appearance, the name being derived from iris—rainbow; the grains give a prismatic display which makes them easily detected. When the association is that of osmiridium the grains are either flat or granular in appearance. The specific gravity of this alloy is about 22·5; it is, therefore, much more than gold 19·2 or platinum, 21·6.

"The Platinum Group."

The native Osmiridium is the hardest and most refractory of the elements of the platinum group. It is scarcely attacked by Aqua Regia, and the grains are as hard as high-grade tool steel. This is one reason why the alloy is harmful in gold bullion since its extreme hardness injures the dies used in stamping out coins in the mint.

Osmium has of late years become valuable economically as a means for making incandescent lamp filaments.

Iridium is used for gold pen points, as a pigment in porcelain factories and in conjunction with platinum for the manufacture of standard bars for the correct measurement of weights and measures. Its high value proves its rarity amongst other things, and the extremely small output from the mines of the world of this metal makes it well worth while seeking for sources of production in this country.

It is regrettable that we have no means in South Africa of treating this rare earth.

The smelting arrangements of the Union exist primarily for gold and base metals and will not undertake the work of refining concentrates of iridium. For the present, therefore, all production must go overseas for treatment, but that need not be a hindrance since the Banks here will ship the stuff and have its value declared by the Home refiners who will also pay producers through the Banks according to the contents of the parcels forwarded to them.

It is especially desirable that tributers of surface deposits and old battery tailings along the reef should be made aware of this source of revenue and that they should no longer cast aside the residues from their plants as of no value once the gold is recovered.

A few analyses at intervals ought to be well within their means to enable them to test thoroughly the lands for the metals osmius, iridium, and to a lesser degree platinum, etc. A good analytical chemist ought to be found for this work as it lies outside the sphere of the ordinary assayer; and is indeed not an assaying job but one for the analyst. The batteries were mediums for the concentration of the iridium particules and will offer the best opportunities for payable recovery values. It is therefore quite a possibility that we shall hear more of the profitable exploitation of old mill sites in the future than we have in the past due to the recovery of the precious metal iridium.

Union Petroleum Co.

BORINGS ON ELANDSPOORT—AN IMPORTANT OIL DISCOVERY.

The Union Petroleum Company has made an important discovery on the farm Elandspoort, between Wakkerstroom and Amersfoort, and at no great distance from the Bethel Wakkerstroom railway. A large quantity of crude oil has been secured from a borehole. A representative of the Journal inspected a petrol tin nearly full of oil which came from this borehole duiing the week, and was also shown cores from the McNamara shot-drill, which is now at work on the property.

Petroleum was first discovered on the farm Elandspoort some time ago. It appears that many of the farmers in the district sent for water out of a particular spring which exists on the property, and the water was believed to possess valuable medicinal qualities. One of the sons living on the farm sent some of the water to the National Bank for analysis, and the result showed that the water contained petroleum. The Union Petroleum Company secured an option over the farm to prospect, and, with the idea of saving money in expensive prospecting, a professional man was invited to inspect the property. The gentleman in question, after spending a few hours on the property, informed the company that the spring containing petroleum was a stagnant pool, and that any oil found would come from diatoms. The directors considered that a certain amount of work should be done and the spring was opened up. It disclosed a large body of water issuing from solid rock. About this time one of the mining inspectors visited the property and samples of water, together with a soapy substance, were taken and sent to Pretoria for analysis. The report on these samples was that the water contained petroleum, but not in commercial quantity. This, at all events, disposed the theory that it was a stagnant pool. Other springs were opened up and it was found that certain of them in a given direction contained petroleum, and it was then decided to drill a series of short holes before any expensive drilling operations were taken in hand. Drilling commenced and in the third hole, which was near the original place of discovery, oil was struck at a depth of 39 ft., 30 and 40 gallons being recovered. This was rather extraordinary, for the reason that the formation was diabase and, therefore, it was considered that it could only be a pocket. At all events it was considered encouraging, but before going further the directors considered it as well to get outside advice, and Mr. E. H. A. Cohen was engaged to locate boreholes if he considered the property and results warranted further expenditure. Three sites in all were located, one of which was on the fourth prospecting hole, and drilling continued to a depth of 602 ft., when a body of oil was struck, samples of which are in Johannesburg. Oil began to flow at 602 ft. and continued to 614 ft. Between these two depths a large quantity of oil came to the surface. During drilling operations a diabase sheet was passed through near the surface, after which alternating beds of highly stratified shale and sandstones were encountered; but at 602 ft. to 620 ft. bands of graphite bedded in sandstone in wavy structure were encountered. Drilling further, beds of clay and oil sands were encountered giving further indications of an oil body at depth. Drilling is being continued, and it is the company's intention to sink a further borehole. In some quarters scepticism is displayed as to the measure of importance which the directors of the company attach to the discovery. But, in our considered estimate, this company has done more in the way of actually "delivering the goods" than numerous others which have entered the local oil world, and in this opinion we are confirmed by reason of the reported recent purchase of a property adjacent to Elandspoort by a very influential group for a large sum of money. Further developments from Elandspoort are awaited with much interest.

OUTSIDE DISTRICTS

BARBERTON DISTRICT MINE OWNERS' AND MANAGERS' ASSOCIATION.

The following are extracts from a report that has been issued by the Council of the Barberton District Mine Owners' and Managers' Association for publication:—

Since the last Annual Report, which was circularised to all mining concerns in the district, seven meetings have been held and forty-seven different subjects dealt with. At one meeting we were fortunate enough to have the attendance of Sir Robert Kotze (Government Mining Engineer) and Major Trevor (Inspector of Mines), both of whom are Honorary Members. In addition, a special meeting was held with the executive of the De Kaap Agricultural Society, relative to roads and bridges, the outcome of which led to two further meetings of delegates from all associations and organisations in the district.

Roads and Bridges.

Our efforts to secure representation on the local Road Board have proved fruitless. The Roads Commission report is strongly in favour of District Road Boards elected much on the same lines as School Boards, but in spite of the Commission's recommendation, backed by resolutions passed at the meeting of delegates mentioned above, nothing has been done by the Administrator to give effect thereto. The bad state of roads, and the lack of bridges and main roads are a disgrace to the country. The Road Commission's report, if acted upon, would relieve the situation and provide for the needs of each district separately.

Miners' Phthisis.

The evidence kindly given by Mr. G. D. Brown, your duly elected representative, before the Miners' Phthisis Commission was read at the Quarterly General Meeting on 4th March last, and since then the report of the Miners' Phthisis Commission has been received. This report has been very carefully considered by your Council and the unanimous opinion arrived at that nothing can be done as regards this district until the mines to be placed on List "B" are scheduled as provided for in Part IV. of the proposed draft Bill.

Native Recruiting.

Representations have been made to Parliament, through our Member, to have the name of Barberton deleted from Schedule "A" of Government Notice No. 1693 of 24th December, 1918, the effect of which would be that natives residing in the Barberton district could only be recruited for work therein. It seems needless to say that the usual deaf ear was turned in our direction regarding the matter. However, the question is not to be dropped, and we are endeavouring to present a stronger case with the co-operation of the Pilgrim's Rest district.

Several amendments have been made to the Mines and Works Regulations, to which your attention has been duly called by circulars.

Lame Duck Mines.

Evey year we reap the usual crop of small mining ventures opening and closing within a few months. Undoubtedly the main cause for this is insufficient capital. Undoubtedly, too, the district suffers in consequence.

Pleasing factors in the position, however, are that claims held in the district show a considerable increase, and inquiries for small mining properties have been fairly frequent of late—factors which indicate the probability of future increased mining operations. But in this respect sufficient stress cannot be laid on the fact that plenty of capital is needed.

The output for 1921 is 25,440oz. fine gold, valued at £108,065.

* * *

Pilgrims and Sabie.

Mr. R. G. Kembo, of the local Mines Department, has been transferred to the White Labour Department at Durban.

* * *

Judging from reports to hand from reliable sources, there is considerable activity in mining circles in and around Sabie, where a number of prospecting parties are at work and quite a large extent of new ground being brought under pick and shovel. The success attending recent development at Glynn's Lydenburg, Ltd., is evidently responsible for the increased exploration of these promising goldfields.

* * *

Klerksdorp: A Premature Boom.

The fact that a little activity in gold mining ventures in this district has been developing during the past month or so, and that a certain amount of plant has recently arrived for use on a couple of propositions, has led to the inculcation of an idea in some quarters that Klerksdorp is on the eve of a boom (says the *Klerksdorp Record*). Now, it cannot be charged against *The Record* that it has ever filled the *rôle* of pessimist in dealing with the prospects and potentialities of this area—either agriculturally or in respect of its gold contents when the district is given a real chance; but in the present position of things it is absolutely incumbent upon this paper to utter an emphatic warning against any steps being taken by anyone in other centres to make for these parts in the belief that opportunities of doing business or getting billets exist here. Already, we understand that the manager of the Afrikander Lease, Ltd., has been veritably "snowed under" with written applications for positions, in addition to numbers of personal callers at the property, while we know of others on the outlook for work who have hopeful designs upon those in charge of the contemplated operations at Rietkuil Mines. But it cannot be too clearly pointed out that both concerns have probably arranged for all the labour necessary for their needs, and thus little hope of "getting a start" there can be counted [illegible] lished on the spot or in the town, and prospective trekkers to these parts are advised to follow the advice given by [illegible]

* * *

Zoutpansberg.

THE RENAISSANCE OF EERSTELING.

Some interest attaches to the proclamation of the farm Eersteling, which is associated with the name of Edward Button, and was the first gold proposition exploited in the Transvaal (says our contemporary, the Zoutpansberg Review). In the early seventies a concession was granted by the Zuid Afrikaansche Republiek to the then freehold owner of the farm Eersteling, No. 87, whereby the right to mine for all minerals was given solely to the freeholder, with certain stipulations, the chief of these being that 25 workmen should be constantly employed upon the property. This concession was granted on the 28th day of December, 1872. The freehold and concession agreement thereafter changed hands, and eventually passed into the ownership of the Transvaal Exploring, Land and Minerals, Ltd. This company—the present registered holders of the freehold of the farm Eersteling—is a company registered under English company laws.

A Mine in the Outside Districts.

The company recently agreed to the cancellation of the concession agreement, accepting in lieu thereof the right to select a mijnpacht to cover the workings and plant. The extent of this mijnpacht is 528 morgen 235 square roods. The area of the whole farm is 3,241 morgen 507 square roods. Eersteling is situated about 22 miles south-west of the town of Pietersburg, and is served by a fair road—via Marabastad—which terminates at the homestead on the farm. The remainder of the farm (ex the mijnpacht) is 2,713 morgen 271 square roods, which is equal to 3,908 claims (a claim being 150 by 400 Cape feet, or 60,000 square feet). Arrangements are now being made to proclaim this latter area, and make it available to the public for the pegging of claims. The proclamation is already sanctioned, and the throwing open of the ground is merely awaiting publication in the Government *Gazette*. There is an atmosphere of romance about Eersteling. Some of the old workings are said to produce wonderfully rich quartz; indeed, it may almost be believed that those old workings have contributed to supply many a prospector's choicest samples. A ladderway descent existed in the shaft 20 years ago; but it did not look particularly safe then, and the writer has not seen it since.

There is alluvial to be found on the farm, and the natives of necessity employed under the concession have sometimes been employed, when not engaged in cultivating mealies, in recovering alluvial gold. The company's report for 1903 or 1904 mentioned between £300 to £400 of alluvial recovered during the year. In 1903 or 1904 there was, too, a 12 lb. nugget reported to have been found at Marabastad. Everyone knows of this find, but the writer, so far, has failed to ascertain who was the finder or what became of the nugget. Doubtless there are portions of Eersteling, outside of the mijnpacht, which are well worth consideration. It may well be supposed, also, that the old-time prospector has got what he deems the choicest bits marked out, and that he will swoop upon them immediately proclamation is notified. But the old-time prospector is not always as infallible as he believes himself to be.

Letters to the Editor.

WHY UNEMPLOYED?

To the Editor, S.A. *Mining and Engineering Journal.*

Sir,—Inside the Knysna Heads are vast quantities of gold-bearing conglomerates which, in my opinion, would pay to work with a simple plant as shown on enclosed sketch. Forty such plants treating 300 tons per day with a complement of 30 men each plant, would give employment to 1,200 men at 2s. 6d. per day. The worker to further share in one-half the profits with claim-owner, who would (the claim-owner) erect the plants and secure the ground. The softer matrix would only be ground up—stones going over waste dump. There is no reason why 2 dwt. conglomerates cannot be worked at from 3s. to 4s. per ton. The profits would be sufficient to induce capital and labour to make a beginning. There is a shortage of nothing but men, plant, and a leader. The scheme will pay well. The worker should make 10s. 6d. a day.

P. MACADAM.

11, Jacoba Street, Troyeville.

We regret that we are unable to reproduce Mr. Macadam's highly-coloured sketch.

Roodepoort United Fire.

On Monday afternoon a fire broke out at the Kimberley main shaft of the Roodepoort United. Attempts have been made to get through from the United by way of the ninth and tenth levels, but they were unsuccessful, owing to the heavy smoke and intense heat. It has been ascertained that the fire has been raging at the thirteenth level, although the actual place of burning could not be reached. Mr. C. S. Maclean, the general manager, is confident that the fire will not extend to the main shaft, and will not affect in any way the Durban Deep or Princess shafts. The origin of the fire is unknown.

JUST PUBLISHED.

PROVISIONAL

Geological Map of Southern Rhodesia.

On one sheet measuring 33 by 35 inches.

Scale 1 : 1000000, or about 16 miles to one inch.

Showing the geological formations in 12 colours, sites of the principal mines, railways, rivers, etc. Compiled by the Geological Survey of Southern Rhodesia, and sold at the Mining Commissioner's Offices in Bulawayo, Gatooma, Gwelo, Salisbury, Umtali and Victoria.

Price £1 (postage to the Union 1/1 extra).

Finance and Information for Investors.

AN EXAMINATION OF BALANCE SHEETS AND REPORTS—DATA FOR SHAREHOLDERS.

Budget Prospects.

The Minister of Finance introduced his Budget yesterday (Friday), and the country is eagerly awaiting his taxation proposals. The deficit as we pointed out some weeks ago is much less than expected, but the railway deficit which is separately dealt with swells the total considerably. Comment on the Minister's proposals must be reserved for next week.

* * *

New Banks in the Union.

The *Government Gazette* contains the statutory returns of the South African banks as at March 31st. No less than seven banks figure on the list, the new comers being the Commercial Bank of South Africa, Ltd., and the Onse Eerste Volksbank. The former seems to be merely a nominal venture as its total cash reserves are given at £198 against liabilities of £830. The Ons Volksbank has total cash reserves of £1,772 against liabilities of £26,197, money on deposit.

The new concerns do not seem to threaten any serious competition to the existing institutions.

* * *

Safeguarding Insurance.

The sensation caused by the recent failure of the City Equitable Insurance Co. in London has found an echo in a proposed addition to insurance legislation, that might well be copied in South Africa. A Bill is being introduced into Parliament amending Section 4 of the Insurance Companies' Act of 1909 to the effect that the following shall be included in the published accounts of all insurance companies each year:—

> A list of the investments, describing each investment and specifying the securities held and in the case of loans to persons stating the names of such persons, except in the case of loans made on the security of the company's policies within their surrender value.

Happily, as regards most of the companies in this country and in England such a provision would appear unnecessary, though they are not likely to object to it. But there are others, and such a clause might have gone far to minimise if not to prevent the damage done in the case of the City Equitable and the concerns allied with it.

* * *

Wit. Deep Finances.

From the annual report of the Wit. Deep for 1921, which comes to us by way of London, we learn that the net profit was £64,251.

The General Manager's report shows 418,139 tons of ore were mined, an increase of 48,572 tons compared with 1920. Development amounted to 5,966 ft. against 4,889 ft. Payable ore reserve is now 1,067,440 tons, as compared with 1,018,390 tons; value has been increased from 6.3 dwts. to 6.6 dwts. During the current year equipment, both on surface and underground, should, the report states, be sufficient for requirements without any alteration, though the equipment of the south incline will be carried out simultaneously with the station-cutting, and the capital outlay on this account may run to about £30,000 for next year. The accounts show working revenue was £83,074, plus forfeited dividends £62, and gold premium, 1920, underestimated, £1,402, together £84,538. Deducting taxes, investments written down, and £19,338 transferred in respect of capital expenditure, there remains net revenue of £64,251, less dividends paid £55,000, leaving to be added to appropriation account balance £9,251, making, with £125,437 brough forward, £134,668. This amount is represented by cash, cash assets and investments totalling £174,573, less liabilities £39,884. Two dividends, Nos. 24 and 25, of 5 per cent. each were paid during the year.

* * *

B.E.A. Corporation.

The sad plight of business in East Africa is reflected in the latest report of the British East Africa Corporation.

The report states that the transactions of the period, after debiting trade losses, working expenses in Africa and London, and interest, less a profit of £4,487 realised on the sale of two small properties, resulted in a loss of £84,643. This contrasts with a profit of £172,604 for the preceding twelve months.

The heavy fall in the value of cotton, produce and merchandise continued throughout the year. The native cotton and other harvests were satisfactory as to quantity and quality, but the consuming markets of the world proved incapable of absorbing, even at continually reduced prices, the stocks accumulating in the hands of merchants.

In these circumstances the company's trading operations were mainly directed to encashment of the stocks already held or contracted for, so far as sales could be made with reasonable security of payment. While thus avoiding serious risk of bad debts, the slowness of sales resulted in large unrealised stocks remaining on hand at the close of the financial year (£366,928).

With a view to providing further liquid resources, a charge is being registered upon certain of the fixed assets of the company to secure a Debenture issue of £100,000. The Debenture bonds will be issued in denominations of £100 and £50, bearing interest at 8 per cent. per annum, with a currency of ten years, and carrying the option of conversion at par into Ordinary shares of the company. These Debentures will be offered to the shareholders at par. An agreement has been entered into whereby the issue has been underwritten at par for a commission at 1 per cent.

* * *

Gold and Currency.

A significant statement on the gold question was made by Mr. Lloyd George in a speech on the restoration of the exchanges as the most important matter to be decided at Genoa. He said: "Before trade can be fully restored you must be able to establish everywhere the convertibility of currency into gold or its equivalent—gold directly or indirectly by convertibility into liquid assets, and lodged in the banks of a country maintaining a free gold market. That may involve, and will involve, a devaluation of currency, but the world cannot afford to wait until currency is restored to par. What matters is to establish the rate at a figure which can be maintained and which will, therefore, continue a reliable basis for international commerce." The policy here outlined has been endorsed by eminent economic authorities in many countries. Identical views are entertained by Professors Cassel and Irving Fisher, and we may quote from a statement of views, prepared for the forthcoming International Economic Conference, by Mr. Anderson, jun., of the Chase National Bank of New York: "Drastic currency reform is called for, aimed at an early restoration of actual gold redemption (or of redemption of the local currency in gold exchange). In Great Britain restoration of the old gold parity should be looked for. Most of the Continental belligerents, however, will do best to establish new, and much lower, gold pars. Restoration of the old gold pars would involve such heavy increase in the burden of public debts, and such violent declines in commodity prices, as to make it almost impossible to accomplish. More is to be gained by early restoration of stability than by aiming at a remote and improbable restoration of the old pars. Fluctuating paper money is the most serious single impediment to industrial progress in Europe."

Five Reasons For Using "KEWANEE" UNIONS

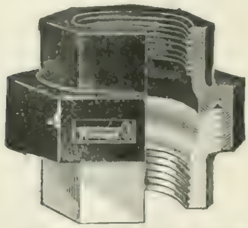


FIG. W2311 OCTAGON PATTERN
"KEWANEE" UNION

1.

Brass to Iron Thread Connection
No Corrosion

2.

Brass to Iron Ball-Joint Seat
No Gasket

3.

Extreme Compressed Air Test Under Water
No Defective Fittings

4.

Solid Three-Piece Construction
No Inserted Parts

5.

Easily Disconnected
No Strength Required

WALWORTH MANUFACTURING COMPANY

Oldest continuous manufacturers in the United States (since 1842) of a complete line of Valves, Fittings and Tools for steam, water, oil, gas, and air. Originators of the Famous "GENUINE WALWORTH STILLSON" Wrench and the "KEWANEE" Union.

Export Sales Agents:

WALWORTH INTERNATIONAL COMPANY
New York City, U. S. A.
Foreign Sales Offices in All Principal Cities

For catalog, prices or information, address
P.O. BOX 3662, JOHANNESBURG. 'PHONE 3195
Stocked by:
The British & Canadian Hydraulic Tube Co., Ltd.,
Exploration Buildings, - - 'Phones 2333 and 2872.

Kinghorn Metallic Valves

SOLE AGENTS:

GEO. CRADOCK
AND CO. (S.A.), LTD.
75-77, CULLINAN BUILDINGS.

P.O. Box 316. Telephone 539.
Tel. Add.: "ROPES."
JOHANNESBURG.

REID BROS.
(S.A.), LIMITED.

Sole Agents for:

CARRON COY.—HAULAGE GEARS, Etc.
ANDERSON, BOYES & COY.—ELECTRIC COAL CUTTERS.
HARDY PATENT PICK COY.—"HARDIAX" AIR COAL CUTTERS.
BLANTYRE ENGINEERING COY.—SCREENING PLANT.
WM. ARNOTT & CO.—CORNISH AND LANCASHIRE BOILERS.
QUASI-ARC ELECTRIC WELDING APPARATUS.
SMALL & PARKES—BELTING, PACKING, Etc.
FINNEY PATENT HAND PUMPS.
WELDLESS STEEL CHAINS.
CHAPMAN DOUBLE BALL BEARINGS.

JOHANNESBURG.
P.O. Box 802 'Phones 6070/1
AND AT DURBAN.

The South African Mining and Engineering Journal.

HEAD OFFICE: 176-180 Stock Exchange Buildings (2nd Floor), Fox Street, JOHANNESBURG, Union of South Africa.

Telephone **913.** P.O. Boxes **963** and **4573.**

Cables and Telegraphic Address: "MINING JOURNAL."

ANNUAL SUBSCRIPTION RATES: Oversea, £2; Union of South Africa and Rhodesia, £1 10s.; Local Delivery (Town only), £1 6s., payable in advance.

AGENTS FOR GREAT BRITAIN AND AMERICA: Argus South African Newspapers, Ltd., Byron House, 82-85, Fleet Street, London, E.C. 4.

Copies of this Journal are obtainable at all Branches and Agencies of the Central News Agency, Ltd., at all News Agents and Railway Bookstalls throughout South Africa, and at the London Agency as above.

CONTENTS.

PAGE
Rand Mining Methods Discussed—II ... 1183
Busy Man's Page ... 1184
How to Save the Mining Industry ... 1185
Far East Rand State Leases ... 1186
What the Mines Bought in 1921 ... 1189
Iridium in Southern Africa ... 1191
Union Petroleum Company ... 1192
Outside Districts ... 1193
Finance and Information for Investors ... 1195
Topics of the Week ... 1197-1200
Engineering Section:
McLellan Rock Drill Bit ... 1201
The New State Areas Plant ... 1203
Share Market ... 1205
Rhodesia ... 1207
Trade and Industries Section:
The Week in the Mining Material and Engineering Trades ... 1210
Company Meetings:
African Oil Corporation ... 1212
Robinson Deep, Ltd. ... 1213

TOPICS OF THE WEEK.

Genoa.

The eyes of the whole world are fixed upon Genoa where deliberations which may well affect the destinies of the human race are being taken. We in South Africa are so absorbed in our own spites and problems that we are likely to minimise the importance of the pitiable quarrel that has developed between Poincare who represents all France and Lloyd George, who although he has succeeded in ruining Ireland and has done his best to bankrupt the United Kingdom still represents a not inconsiderable quota of public opinion in the British Isles. It is in spite of Lloyd George and not because of him that the British Budget for the financial year 1921-22 shows a surplus of forty-five millions sterling.

South Africa by virtue of her sovereign status, as determined by the astute statesman and joint creator of the League of Nations, General Smuts, cannot but be affected by any decisions or indecisions which may result from a conference as between Britain and France, and certain nations which used to be called "Powers" and are now coteries of dangerous Bankrupts. Mr. Lloyd George loves these assemblies. Whenever the political atmosphere in Europe is a little too dull he pipes a tune which summons Presidents and Prime Ministers with enormous and extravagant entourages to some delectable place by the blue waters of the Mediterranean where they rent expensive chateaux or hotels, indulge in indiscreet golf foursomes and make long speeches which always end in a semi-colon of futility.

Mr. Lloyd George having made the world safe for democratic anarchy by means of catch phrases was on the point of shaking hands with the Bolsheviks when he was suddenly startled by finding that the Soviet was in alliance with Germany. In reality there was nothing at all surprising in this. Things have long been tending in the direction of an understanding between Lenin, Trotsky & Co. (who have stated that the Bolshevist Government is prepared to recognise all its obligations but has no money to meet them) and the "democratic" leaders of a revengeful Germany who are also prepared to recognise milliards of debt on the basis of a similar plea of poverty. We hear of plans to reorganise Russia's millions—they are not all dead yet despite the Soviet—on a military footing with, of course, Germans as officers. France with three and a half per cent. of her population "mort sur le champ d'honneur" and a large part of her territory ravaged is naturally alarmed. It would be strange if she were not for the burglars lurk in her back garden; there is no channel between France and the despoilers.

The attitude of Mr. Lloyd George and his Radical coalitionists has brought about a regrettable estrangement between France and England, an estrangement which is probably more acute than at any time since the Fashoda incident. It is not altogether easy to focus the situation at this distance, especially when our daily press cables out such cryptic statements as this for example: "Lord Curzon is somewhat anti-French, but much more anti-Bolshevik, and, though he is undoubtedly ill with neuritis, he is unwilling to meet the Bolsheviks at Genoa."

But one thing is clear that a rupture between France and England over the Lloyd George policy would be disastrous for the World, the Empire, and the "sovereign states," like South Africa, which own allegiance to the "Commonwealth of Nations."

Meanwhile, Mr. J. L. Garvin, editor of the *Observer*, who is keeping a portion of the local Press *au courant* with developments at Genoa, is evidently writing for a Post-War Peerage; at any rate, his ink seems to be clouded with Criccieth vapourings and writings such as his are calculated to break down the structure of cross-channel friendship so laboriously built up in the Edwardian days.

Lloyd George and Smuts.

It is interesting to note General Smuts's view of the Genoa Conference and the importance which he attaches to it from a South African point of view. In an interview published in the *Cape Times*, our Prime Minister has declared that "if all that resulted from Genoa was merely a Russo-German treaty, then this division would be perpetuated. Europe would be irrevocably split for the future, and Genoa would become a new and fatal milestone in European policy. The fundamental unity of European civilisation was the main lesson of the Great War, and he firmly believed that the policy of Mr. Lloyd George was to recognise this unity in the public policy of Europe, unity which even the Covenant of the League of Nations had failed fully to recognise. The division of Europe into two camps was not the only trouble. Parallel with it, two irreconcilable policies were developing. Great Britain, all former neutrals, and many of our late enemies were sincere believers in the policy of disarmament, while France and Russia at opposite poles were putting their faith in militarism. If this militarism survived, then the policy of disarmament which Great Britain was adopting on land and sea would yet prove to be a fatal blunder, and it would be far better for her to face realities at once and arm in turn." General Smuts has declared that with all his heart he prays for the victory of Lloyd George, and he must foresee that with the failure of pacifism at Genoa his treasured League of Nations ideals will go the way of all other Utopias conceived in a spirit of misunderstanding of the eternal enmities, conceits and [illegible] the League of Nations a [illegible] yet dangerous [illegible] South Africa might [illegible] than she [illegible]. She might have no need of the British Navy [illegible] Lloyd George Government has been endeavouring to reduce [illegible]. But [illegible] Lloyd George's [illegible] evangelism at the Conference will, as Smuts has truly said, make it imperative for Britain to realise the dangers of her policy, and will, we trust, compel her people to scrap the present Government, instead of the Navy and Army. General Smuts is, it seems, beginning clearly to perceive that the present drift of the world is not towards that peaceful haven which he and Woodrow Wilson sighted in the mirage days of three years ago, but that its course is towards the rocks of war. In the House of Assembly on Tuesday, the Prime Minister of the Union declared that "a [illegible] the world. A [illegible] and a new earth had been expected as a result of the war, instead [illegible] generations, and the future promised harder work and less wealth, hence discontent and disturbances. Another offspring of the war was the revolutionary spirit apparent everywhere. Everywhere every kind of authority, religious, political and social, was flouted." This "change" is the direct outcome of the policy of making "the world safe for democracy," of "self-determination," and of the "wait and see" policy. The sooner British statesmen sense its perils and set about making the world safe for the British Empire, and of ridding the United Kingdom and the Dominions of the professional mischief-makers in and out of Parliaments the better will it be for everybody. The first one to go should be Lloyd George. As Sir Henry Wilson says, it is a question of [illegible]

Rhodesia's Dilemma.

[illegible] responsibilities and the people of Rhodesia are tired of Government from London Wall Buildings.

The Imperial Government in its present mood of self-determination and the disruption of the Empire is not likely to shoulder further responsibilities and although there are [illegible] of Government a large number of our neighbours up North appear to be anxious to try the experiment of Responsible Government. Rhodesia is a young country with only 50,000 whites and upon these devolves the task of making a most momentous decision.

History has a habit of repeating itself and Rhodesia stands again to-day in much the same position as the uncivilised territories of Matabeland and Mashonaland and [illegible] various political agents of the South African Republic and the growing German Empire sought to frustrate the all British schemes of Rhodes. Luckily for the Empire, Rhodes succeeded where others failed. When Colonel Pennefather hoisted the flag at Mount Hampden the British-South Africa Coy. wrote History in Imperial Capitals.

There is no pioneer column forging up into the North to-day, but covetous eyes are again set upon Charterland and it is for the people of Rhodesia to say whether they are going to remain as an independent and intensely loyal colony in the heart of Southern Africa or whether they are going to throw in their lot with a "sovereign state" whose borders will march with the waters of Tanganyika.

Before her people take any decision they should count the costs and reckon on the reapings. There is much in the Union that is not looked on with favour by Rhodesian eyes. The language question is one difficulty, problems of [illegible] revolutions in the Transvaal.

Colour and the Mines.

This colour bar is the Union's greatest problem. The Industrial Commission which is now taking evidence at the Law Courts is in reality nothing more than a Government inquiry into the ethics of industrial colour on the Rand as the Low Grade Mines Commission was and as the Unemployment Commission was. All these quibbles about ratios are nothing more than arguments as to the advisability or otherwise of perpetuating stop-gaps which sooner or later will have to give way before the pressure of fundamental facts.

The members of the Commission appear to argue from the viewpoint that the chief function of the mines is to provide employment for Europeans whether they are redundant and inefficient or not. And judging from the manner in which argument is developing the mines are perhaps to be subjected to differential treatment in regard to iriational ratios of white and coloured employment. In other words the grade of the ore and the profits earned may determine the respective spheres of white and black labour unless the recommendations of the Unemployment Commission, which is understood to have favoured a policy of all blacks below the collar of the shaft and all whites above it, alter the conception.

There can be no economic freedom in any legislation which may be enacted on the basis of employment which is to be determined by grade and dividends. If managers have to work the mines with which they are entrusted on fantastic formulae in which X is the grade and Y the dividend and Z the divisional factor arrived at by dividing A the black population by B the European population, then there can never be anything but quibbles and queries in the Administration of the Rand.

If agriculturalists in the Union had to operate their [illegible] determined by the acreage under cultivation multiplied by the square of the price of mealies and divided by the number of inches of rain that did not fall during the summer someone would very rightly suggest that the spirit of Lewis Carroll should fill the portfolio of agriculture in the Union Cabinet. It seems to us that these ratios are only tinkering with the problem. But Sir Wm. Solomon, Chairman of the Board, has stated that "the Board has nothing to do with any temporary relief, only with permanent matters for the future.

In view of this declaration we feel strongly that no matter how distasteful the subject may be the actual facts of the colour bar statute and not the inconsistencies of the status quo disagreement should now be frankly faced. The Chamber of Mines has guarantéed the observance of a ratio of 10.5 (that is to say, of an average employment of not more than 21 natives to 2 white men) for the whole of the [illegible] contracted to observe such a ratio for a lengthier period than two years although at the expiration of that time it may be prepared to do so.

But of this we know nothing. We do not even know that the Chamber of Mines will exist as the Chamber of Mines two years hence. The very name of the institution is so unpopular to-day that in 1924 it may have changed its title to that of the Society for the Prevention of Cruelty to Shareholders. It may indeed become so impoverished that it will not be able to buy more Brunswigas with which to calculate the ratio of Van Wyks to Shangaans on a reef of a [illegible] dip with [illegible] a high earth temperature. And therefore it will surely be just as well if the Commission or Board or whatever it calls itself comes down to hard basic and concrete facts and ceases to worry about such ephemeral things as ratios.

Mr. Hay's Candid Statement.

Much evidence has already been tendered to the Commission and the education of those members of the Board who are strangers to the complexities of Rand mining must surely be approaching completion. Most, of course, of all this has been said before; most of it has been said before not once or twice but dozens of times, but as it has never been said before by Sir Harry Ross Skinner on the 28th day of April, or by Mr. Gemmill before Mr William Brace, and therefore the evidence fills up nearly as much space in the morning paper as a description of the bats in the Koster Caves.

Of all the statements submitted to the Board so far the lengthy treatise of Mr. Errol Hay, Technical Adviser to the General Mining and Financial Group of Coys., is the most courageous and convincing. Mr. Hay does not mince matters. He is opposed to all grandmotherly ratio legislation for the Witwatersrand where "conditions vary so enormously that it would be utterly impracticable to apply any ratio as a whole to the mines." And he sums up his case in a paragraph on page seven of his evidence-in-chief where he says: "It will be seen, therefore, that to fix any ratio for the mines would be fundamentally wrong in principle and impossible in practice, and that in order to obtain the efficiency which is so necessary at the present time if the bulk of the Industry is to be saved from extinction each mine must be allowed to employ whatever proportion of white and native labour is best suited to the conditions prevailing at the time."

There is much in this, of course, which will offend the criers of the empty parrot call about making South Africa white. But Mr. Hay's Green Book—it is a large volume of 32 printed pages—contains nothing but sound common sense, and it indicates that although we can never make South Africa white in the sense that Canada and Australia are white (because of our preponderating native population), we can increase the scope for European employment on the mines. But we shall never permanently achieve this by the application of ratios or by hoisting the false colours of a white ensign of inefficiency.

A Searching Cross Examination.

Mr. Hay has, of course, had to submit to a very searching cross-examination by the members of the Board and by Messrs. Crawford, Lucas and Harris. The Government Commissioners and counsel for the Trades Hall brought their heavies into action and submitted the evidence to a merciless bombardment. Mr. Hay was frequently censured for holding to and expressing views which are not quite in accord with the doctrine of making a black South Africa safe for a white democracy. Mr. Brace was particularly busy in an endeavour to pull the witness to pieces, and reminded Mr. Hay that he did not live a century ago and advised him not to be unduly provocative or prejudiced. On the whole, Mr. Hay stood the test very well, and championed the case for sane industrialism with marked ability. He refused to admit that there was any advantage in Boards of Reference, and contended that the native could be entrusted with numerous responsible jobs which legislation had reserved for the white man. Mr. Hay spoke his mind clearly and without mincing matters, and that in itself is surely a great quality in an age given up to camouflaged speech. Mr. Hay did not spare the Chamber of Mines when speaking on matters wherein he differed from the policy of that Witenagamot, and he declared that agreements had been made by laymen which had proved most embarrassing to the mine managers who had to interpret these agreements and to translate them into actual practice. As to shaft and shop stewards, Mr. Hay stated frankly that he objected to them, and with regard to trade unionism on the Rand generally he remarked, "Let the unions prove their *bona fides*. We don't want to work in the dark any more." The most remarkable view of all expressed by Mr. Hay was that conditions underground on the Rand were restful and in some respects preferable to those at surface. The passage between Mr. Hay and Mr. Brace in this respect is worth quoting and has been reported as under:—

"Personally I find it a rest underground," was a remark by the witness when hours of working were under discussion.

The Chairman: You would not find it a rest to work eight hours underground.

Mr. Brace: You may think the Commission a body of very simple-minded people, but really and truly don't run that on us. One crawl up and down a stope, and I came to the conclusion that it was anything but a health resort. (Loud laughter.)

Mr. Hay said he was not suggesting a health resort. "Underground you get an even temperature," he observed. "You are not liable to get wet through there. (Laughter.) On the surface they got rapid changes of temperature. He would sooner work underground.

Mr. Brace: I worked underground many years. It is a good many years since. I don't propose returning to it. (Laughter.)

Mr. Errol Hay is the technical adviser to a group which controls six productive mines. At the time he was giving evidence one of these, the Roodepoort United, was on fire, and at another, the West Rand Consolidated, a number of natives were entombed in consequence of a big fall of rock. We therefore find it difficult to take Mr. Hay seriously when he endeavours to picture mining on the Rand as an occupation of charming and restful environment.

Protection of the Basic Industries.

It is satisfactory to note that the debate on Protection for local industries initiated in the Assembly this week was not allowed to go far before the House was reminded that the basic industries, mining and agriculture, were those most deserving of State assistance. We are all in favour of a reasonable measure of protection for our minor industries but that must not blind us to the fact that the two great legitimate industries of the country, farming and mining, should have first call on the fostering care of the State. Sir Abe Bailey rendered a real service to the mining industry by pointing this out, and he was able to quote from first-hand experience examples of the stepmotherly treatment recently meted out to the mining industry by the Government.

The first case mentioned by Sir Abe Bailey was that of the Messina Copper Co., which had produced £3,500,000 worth of copper. The company paid £3,000,000 in wages and £400,000 to the Government, and only £100,000 to the shareholders. If the mine had been 50 miles North in Rhodesia it would have been a payable proposition. A subsidy of £25,000 would have led to the reopening of the mine and the expenditure of large sums in wages. Again, the Leeuwpoort mine had only returned £116,175 to the shareholders. Yet, he said, this mine had spent one million in wages in the country since it started, and if the Government had assisted it by taking twenty tons of tin per month at £12 10s. over the cost to them of tin from England smelting operations would have been recommenced. All that was asked for was for the means to keep the mines dry. With that slight assistance they could have been kept ready to start again, and we could have produced tin and copper in this country instead of sending abroad. Sir Abe Bailey declared that a country which produced tin and copper and sent to foreign countries for them when at a cost of £50,000 mines which had spent four millions in the country would be kept going "would make a hyena laugh." He pleaded for less zeal and more vision, and urged that before the mines he had mentioned closed there should have been an inquiry, in which case he was sure the Railway Administration would have come out of it very badly.

Turning to the coal trade, Sir Abe pointed out that it had been almost ruined eighteen months ago by the Railway Administration, and that the line to the Rand had even now the highest coal rate in the world. He pointed to all the countries that had been built up on protection, and to the colossal amount spent in assisting the iron and steel industry in Canada, which now spent £110,000,000 in wages, whereas our Government refused £50,000, which would have kept the Messina and Leeuwpoort mines going.

These certainly are hard facts that cannot be gainsaid, and Sir Abe has the support of the whole mining community in thus rubbing them in. The new Board of Trade and Industries may or may not be useless, as its critic, Mr. Mackeurtan, alleges. Certainly it has done nothing for mining development in the country owing, perhaps, to the [illegible] is not one of the [illegible]. The record of the [illegible] seems to be that while the [illegible] little help from the State, the primary business of developing our mineral resources is receiving none at all, and struggling mines are left to die neglected and unaided. Every industry in the Union wants encouragement and State aid; and mining merits these most of all because the rewards would be far greater and more direct.

The Mainstay of the " Goldfields."

The Robinson Deep held its annual meeting a few days ago, and the speech made by Mr Douglas Christopherson at that meeting appears in full in another portion of this issue. The Robinson Deep is the most important subsidiary left to the controlling group, the New Consolidated Gold Fields in the Union. Years ago this corporation ranked second only to the Corner House in importance and achievement, but the Gold Fields, whether through inevitable adversity, a lack of foresight, or a bad selection of interests, has come down in the world of mining and finance since then. *Tempora Mutantur.* Nineteen years ago the Robinson Deep was the largest producer of gold on these fields. In October, 1903, for example, the big Gold Fields mine led the output list with a production of slightly under £59,000 " from all sources." The fact that in December last the Robinson Deep was eleventh on the list with a " working revenue " of £90,234 is an indication of the changes that have taken place on the main reef series in the last couple of decades. At the annual meeting the Chairman had some encouraging facts and figures regarding development to place before shareholders, and he showed that the profit on working was £179,000 at the average price of gold realised for the year of 105s. per fine oz., as compared with 112s. in 1920. The premium on gold during the year amounted to £218,883, which at par value would have resulted in a loss of some £39,000 or in a deficit of £173,000 on the year's operations. He stressed the point that working costs must be reduced in view of the fact disclosed by the accounts that the profit made by the company during the period under review was solely due to the premium on gold, as was, the Chairman stated, the case with many other companies. The importance therefore of bringing about a reduction in working costs and of reorganising underground work was paramount. Mr. Christopherson made it quite clear that the result of the strike and the revolution was not looked upon by the mining industry as a " victory " over the workers, but as the only possible solution of the economic factors now obtaining which affect gold mines equally with other commercial industries. In summing up, the Chairman deprecated bitterness amongst workers in face of the adamant economic factors of the gold mining industry *vis-a-vis* the falling price of gold.

The Coal Grading Bill.

The Coal Grading Bill was introduced into the House of Assembly this week by the Minister of Mines, and after some opposition passed its second reading and was sent to the Committee stage. Messrs Roy and Jeppe and other representatives of the coal interests have left for Capetown in connection with the Bill. In introducing the Bill, Mr Malan said it aimed to provide for the adequate grading of coal for export purposes. In the case of essential services the Government, he said, had the right temporarily to suspend the exportation. The export trade had suffered owing to inferior grading, and the Bill would remedy that. Mr. Munnik opposed the Bill, as he held it would create monopolies, eliminate competition, and add to the cost of shipping. Sir Abe Bailey was in strong support, and pointed out how the reputation of South African coal had suffered owing to the shipment of inferior coal, and considered the Bill was a foundation on which a great industry would be built up. With some amendments, it is expected the Bill will be passed next week.

Notes & News.

Sir Abe Bailey and Delagoa Bay.

Sir Abe Bailey is never happy when discussing the coal trade unless he can get in a dig at Delagoa Bay. In his speech on protection for the basic industries of mining and agriculture in the Assembly this week he said many admirable things, and in a leading article elsewhere in this issue we strongly commend his eminently commonsense views on this subject. But we cannot agree with his sweeping condemnation of our Portuguese neighbours, and his reference to them seems, to say the least, undiplomatic towards a friendly people. According to the *Daily Mail* report, Sir Abe said that the coal industry had been almost ruined eighteen months ago by the Administration. Then the strike hit it very hard, and in addition to these disabilities the handling of our coal at Delagoa Bay caused delays. Large sums had to be paid for demurrage, and ships rightly refused to return to the port for coal. He declared that the sooner people realised that industries could not develop in the Eastern Transvaal so long as Delagoa Bay remained under its present control the better! Despite the applause of the Assembly which the *Daily Mail* assigns to it, we cannot subscribe to this extraordinary statement. Nor can we understand the spirit that prompts such an outburst at a time like the present, when delicate negotiations are afoot between the Union and the Mozambique Province.

* * *

African Oil Corporation.

The second annual meeting of this company was held in Johannesburg the other day, and a full account of the Chairman's speech appears in another portion of this issue. Mr. Arthur Pratt, who presided, stated that the option granted to the Royal Dutch Group had been extended to August, 1922. In the event of such option being exercised, the African Oil Corporation would receive fully paid up shares to the value of £200,000 in the new company to be formed, such company to have a working capital of £500,000, one half of which was to be offered to the present Corporation. The consulting engineer of the Corporation estimated the area of profitable oil shale on their property at fully 10,000,000 tons. The engineer of the Royal Dutch Group was of opinion that approximately one half of the payable tonnage previously estimated would have to be eliminated. The Royal Dutch Group had made it a stipulation that before exercising their option sufficient payable shale to treat 1,000 tons per day for 40 years should be available, and to meet this position the Corporation had secured control recently of a company owning contracts over farms adjoining their present holdings. The Corporation considered that the new holdings, in conjunction with their present ground, would make up the necessary tonnage required by the Royal Dutch Group. But whatever the result of the outcome of the negotiations with the Royal Dutch Company the Corporation had clearly demonstrated the possession of sufficient payable oil shales on their properties to keep going for many years a plant equal to any unit owned and successfully operated by any individual shale company in Scotland, and consequently of sufficient importance to attract the attention of financiers of less ambitions than the Royal Dutch Group. At the same time, he did not for one moment think that the Royal Dutch Company would not conclude business with them and thus found an oil industry in South Africa. He was pleased to be able to report that from interviews with Government officials he found the Government most willing to grant a hearty co-operation in the establishment of an oil producing industry in this country.

PARYS DIAMOND DIGGINGS.

In connection with the Parys Diamond Diggings, to which reference was made in our last issue, we understand that a digger discovered the other day, a 18½ carat stone, which has been sold for £1,000.

ENGINEERING SECTION.

McLellan Rock Drill Bit.

(By H. A. Kee).

The following article indicates a method of stopping wear in the gauge of steels and would probably result in obtaining 10 to 15 per cent. longer run on each steel, with a corresponding reduction in the installation charges on the equipment of steel for machines on the Rand.

Experiments at the Kerr Lake property, at Cobalt, Ont., have proved of value in procuring more efficient rock-drilling footage, particularly during the last year, by materially altering the design of the company's standard four-point cross-bit. These changes are essentially the result of a machine-drilling contest held at Cobalt on July 2, 1921.

Two teams entered from the Kerr Lake, with 13 other entries. In the course of experimenting and practising for the competition it became apparent that changes were necessary in the bit to procure maximum drilling speed in the contest. W. P. McLellan, master mechanic, and others of the mine staff and employes assisted in working out the design of the bit used, which is referred to here as the McLellan Kerr Lake bit. The Kerr Lake teams experienced little difficulty in drilling the two deepest holes in the given 15 minutes, using a No. 88 Rand Leyner water drill, although the machine used was not the best drilling No. 88 Rand Leyner water drill in the contest. It will, therefore, be apparent that the exceptional results were due not only to the efficiency of the miners and good work of the machine, but also to the diameter, gauge and temper of the bit, which drilled a perfectly free hole in exceptionally hard-surface Cobalt conglomerate without the slightest difficulty, although the first three steels had only 1-16 in. gauge variation in 24 in. run.

We found during recent years, by studying conditions closely and experimenting considerably with various types of water machines in the hard lower contact of the Keewatin and diabase formations, that the customary practice of using drill bits ⅛ in. gauge variation per foot of run is entirely unnecessary, and with the McLellan Kerr Lake bit on 1⅛ in. hexagon hollow steel the diameters of bits have been gradually decreased from 2⅛ in. to 1½ in. on 1 in. hexagon hollow 2 ft. starters, used to collar 7 ft. holes. The company is now successfully using 3-64 in. variation per foot of run on steel from 2 to 8 ft. long in underground operations. If it were possible to gauge more closely with the drill sharpener, the steel could be successfully used with even less variation in Cobalt conglomerate and in the Keewatin and diabase formations.

By boring a smaller hole greater efficiency is obtained from the 1¼ and 1⅛ in. explosives, as larger holes allow the explosive to buckle when placed in the hole, and the result is at least one air gap to each stick of explosives used, which condition, with the best possible tamping facilities, does not give the desired results. It is probable, too, that 1⅛ in. powder well tamped in proper-sized holes drilled in average ground will produce results as good as can be obtained with 1¼ in. explosives, and this would prove a further saving.

We therefore appreciate the benefits of using a bit of smaller diameter and of improved design when drilling efficiency is increased from 20 to 40 per cent., with about the same advantage in the results obtained with explosives, and a material advantage is indicated not only in the breakage of steel, but also in repairs to machines. Such advantages are due to the use of drill bits which cut freely with the minimum amount of vibration and steel-to-rock resistance, thus eliminating unnecessary binding and reaming conditions.

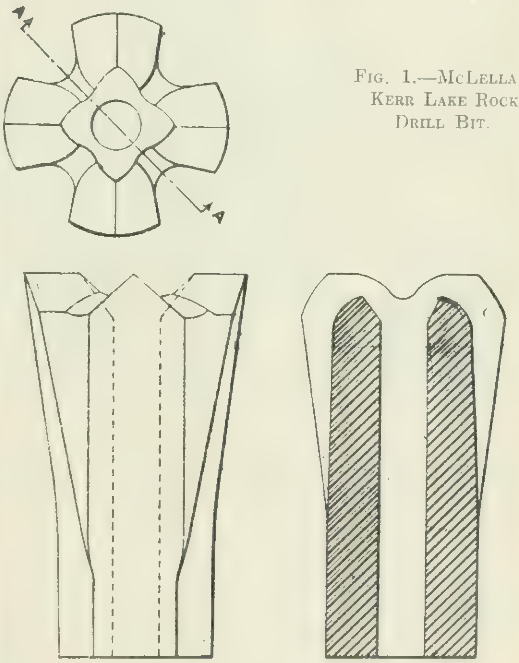


FIG. 1.—MCLELLAN KERR LAKE ROCK DRILL BIT.

We always appreciate the necessity of properly designed and tempered reaming angles for reciprocating piston drill boring, but in operating with Leyner and other water-stoper types we believe that best results can be procured with the minimum amount of resistance and reaming. This may be accomplished by using the tempered cutting edges of the bit and gauge corners only to cut or chip out the hole instead of [illegible] to guide the steel with the reaming edges of the wings designed with a slight degree of taper.

With the McLellan Kerr Lake bit, which may be used as a detachable bit, a core is left in the centre of the hole, and large pieces of this core break off as the four individual chipping chisels cut out the channel around the core. Then these coarse (⅛ to ⅜ in. in size) particles of core are, in operation, blown out of the hole by the usual water and air pressure. The lower portion of this centre core positively guides the drill bit by inner bearing or contact of bit and core, leaving the essential outer corners of the bit free for maximum boring, with a minimum amount of wear. All of this is indicated in Fig. 2.

It may be said that slightly tapered or nearly parallel wings are necessary to keep the steel from cutting out of line, as is undertaken with the standard double-taper bit, but we believe that extreme variation in gauge and large diameter bits is more often the reason for running or binding holes, and, in average hard ground, with a minimum variation in gauge and small bit diameter, these difficulties may be eliminated.

The McLellan four-point cross-bits are made with heavy wings about 9-16 to ⅝ in. thick, the pitch or taper of which is 7.5 degrees, and finished with an 8 in. circle rounded fillet, which design allows ample diagonal corner clearance as compared with diameter of cutting edges of bits which are made with 92 to 100 degrees angle, depending on the character of ground to be drilled.

As indicated by Fig. 3, it will be noted that the McLellan punch, when used separately from the sharpening dollie, is a double-tapered tool, which, without sticking in or splitting the steel, makes the walls of the hole in the bit the proper shape to assure higher cutting efficiency.

As previously stated, this centre core acts as a positive guide for the drill-bits, making it possible to drill perfectly free-runnning holes 12 to 13 ft. in the hardest Cobalt conglomerate with water machine and hollow steel, and this has been done with a gauge variation of from 1-64 to 3-64 in. per foot, due to the fact that this combination of core guidance and positive rock-chipping bit cuts a perfectly smooth and straight hole in the direction in which it is pointed.

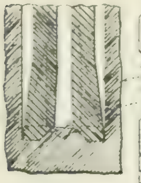

Section through bit and rock showing advantage of enlarged water-outlet in eliminating reaming action on sides of steel
Rock core to here

Fig 2

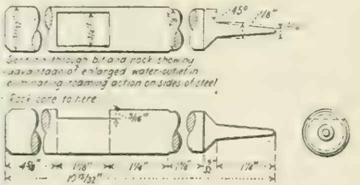


Fig. 3

FIG. 2.—SECTION THROUGH BIT AND ROCK SHOWING ADVANTAGE OF ENLARGED WATER OUTLET IN ELIMINATING REAMING ACTION ON SIDES OF STEEL

FIG. 3.—MCLELLAN PUNCH

We have found, too, that vertical down holes at least 8 ft. deep can be drilled without difficulty with this design of bit by using the same diameter of bit on each steel, but we have not as yet undertaken to drill holes at various angles.—*Engineering and Mining Journal of New York.*

LONELY MINE GAS ENGINE EFFICIENCY.

Green Wood Fuel Economies.

Some striking figures have been supplied to us by the engineering department of Messrs. Lewis and Marks showing the results obtained from the new gas engines at the Lonely Mine. These gas engines are the first of their kind in South Africa to run on green wood fuel, and the figures are, therefore, all the more remarkable. The average cost of steam power for the last three months on steam was £1,557 6s. 1d. per month. The fuel consumption was [illegible],559 cords. The cost of power gas plant in March was £1,393 16s. 3d. for a 330,680 k.w. hour output. The cost per k.w. hour was 0·80d. The fuel consumption was 670 cords. We hope in an early issue to print a detailed description of this plant.

Railway Electrification in England.

The news that the first contract for the further electrification of the London, Brighton and South Coast Railway has been placed with the General Electric Co., Ltd., of England (represented in South Africa by the British General Electric Co., Ltd.), is one of exceptional importance, not so much on account of its value as of its significance.

It is an order for the provision for the whole of the electrical equipment for twelve additional motor coaches of 1,000 h.p. each, to enable the London, Brighton and South Coast Railway to operate its line from Balham to Croydon electrically.

The motors will be of the single phase type, formerly obtained in Germany, but now to be manufactured by the Witton works of the G.E.C., and the contract is the first of several which will probably be settled in the near future.

It is the company's claim that it carried out the first large installation on the three-phase system in England, and now it has the satisfaction of making its debut in connection with railway electrification by securing the first Home contract for A.C. main line equipment. And lastly, the placing of the contract further strengthens the opinion that British manufacturers are able to hold their own against foreign competition.

The Kinematograph in Engine Design.

A new type of petrol engine recently produced in Great Britain possesses many interesting features. It is designed to retain the essential advantages of the two-stroke engine while avoiding certain disadvantages and difficulties usually met with in that type. In order to perfect the design the inventor carried out a series of experiments with the aid of a kinematograph apparatus for the study of the movement and velocity of gas. When under test this engine developed 10 horse-power at 3,800 revolutions per minute, and when fitted to a motor cycle frame gave an average petrol consumption of over 60 miles per gallon. The use of castings requiring special care in the foundry has been avoided, and the machinery and erection have been made as simple as possible.

ASBESTOS

HOBDELL WAY & CO., LTD.
MINORIES, LONDON.
Cables: "HOBNAILS."

The New State Areas Plant.

THE HADFIELD BREAKERS—SMALL INITIAL COST—LOW OPERATING EXPENSES.

In recent issues we have outlined details of the plant requisitioned for the above proposition, given particulars of the flow sheet and summarised the methods to be employed for the recovery of the gold; and we are now enabled to give further particulars in regard to the machines to be employed for the reduction of the ore to the size necessary for feeding into the tube mills.

The preliminary crushing will be effected by patent solid steel frame jaw breakers made by Messrs. Hadfields, Ltd., of Sheffield. These breakers are very largely used on many of our gold mines, and their general design and all-round efficiency are so well known to our readers that further comment upon them by us is unnecessary.

As has already been reported in our columns, however, the stamp battery will not form part of the plant. The secondary crushing will be done by a type of machine not hitherto employed for the same purpose in South Africa, though it enjoys a well-earned reputation on other gold fields of the world.

From the accompanying illustration it will be seen that the ore is crushed between two saucer-like discs. The central pulley drives the outer shaft (with the outer disc attached), and when in operation the packing of the ore causes both discs to revolve in the same direction at the same speed. By means, however, of the end (eccentric) pulley—which is driven in the opposite direction to the central driving pulley and at a much greater speed—a rapid eccentric motion is imparted to the inner disc; thereby greatly accelerating the crushing action and amount of product.

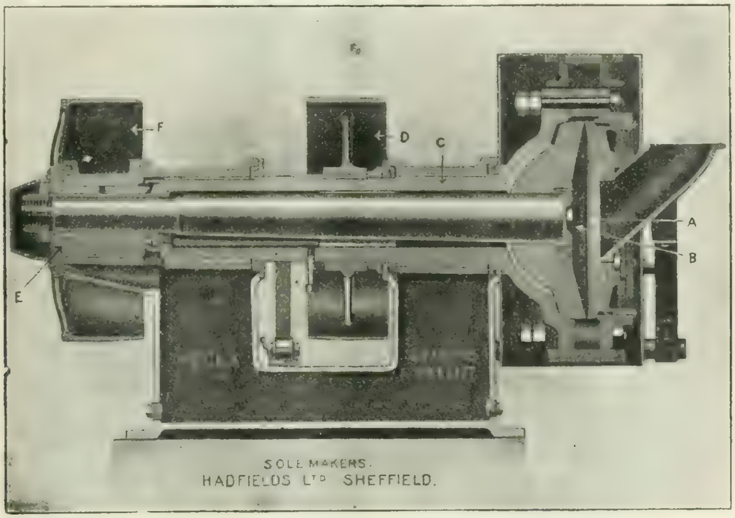
As soon as the ore is fed into the machine it is thrown by centrifugal force towards the crushing zone, where it is "nipped" until as soon as it is sufficiently small to pass through the periphery, it is flung from between the discs into the discharge chamber. Choking of the machine is therefore virtually impossible.

The crusher frame forms an oil tank, to which a pump is fitted. Several gallons of oil per minute are pumped through the bearings—and returned to the tank without loss. The main bearings operate in a bath of oil and all the bearings are dust proof.

The action of the crusher is entirely positive: and there is no waste of the relatively small amount of power required to drive the machine.

Messrs. Hadfield's are the makers of these machines also: and are very confident that the 'Hecla' Disc Crusher will be a potential factor in this country; not only for properties still to be developed but also—by reason of the very small initial cost as compared with that of stamps, and the low operating cost—as a means of resuscitating what have hitherto been considered as unpayable propositions.

There is undoubtedly a great field for these machines in South Africa, not only on the mines but also for the production of road chippings, small stone, concrete, etc., etc., and it is interesting to note that several of them are already being used with great sucess for these purposes. The Johannesburg Municipality has installed three of them.



Hadfield Disc Crusher.

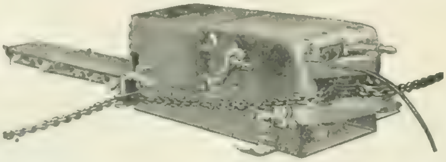
Pneumatic Plant for Road Work.

Owing to the increasing use of concrete in road construction, considerable attention has been given in Great Britain to the development of machinery for breaking-up road surfaces and for cutting trenches. It is natural in this connection that pneumatic tools, which have proved so useful in piping work, should suggest themselves for adaptation to dealing with roads. A British firm has developed a special type of portable air-compressor for providing power to pneumatic hammers and pneumatic picks. The compressor is mounted on a steel frame carried on four rubber tyred wheels, to facilitate transport and to reduce noise and vibration when the engine is running. The engine works on paraffin and is direct coupled to the compressor, which can supply 130 cubic feet of free air at a pressure of 100 lb. per square inch. Arrangements are made to connect up any tools, such as caulking and riveting hammers for breaking-up the road, and pneumatic picks for cutting trenches.

THIS IS A SULLIVAN C.E.9 LOW VEIN COAL CUTTER AND POWER CAR WITH TRAILER-TYPE REEL.

AND

THIS IS THE C.E.7 IRONCLAD SHORTWALL COAL CUTTER



MADE BY THE SULLIVAN MACHINERY COMPANY, CHICAGO.

"THE ARISTOCRAT OF PORTABLE BELT CONVEYORS."

EITHER OIL OR ELECTRICALLY DRIVEN.

MADE BY THE BROWN PORTABLE CONVEYING MACHINERY COMPANY, CHICAGO.

FOR FURTHER PARTICULARS APPLY TO:

THOMAS BARLOW & SONS (S.A.) LTD.

DURBAN.
P.O. Box 1011. Tel. Add.: "SHIPMENTS."
'Phones : .. .. 1, 1965, 2322, 2460.

JOHANNESBURG.
P.O. Box 6901. Tel. Add.: "SHIPMENTS."
'Phone .. .. 6503.

The Week in the Sharemarket.

A HESITATING TENDENCY—ENEMY SHAREHOLDINGS—QUESTION OF LONGER HOURS FOR BROKERS.

Very little change has taken place during the week. A few London orders have been drifting through, but not to a sufficient extent to materially affect the local position. There are several points to account for a hesitating market at the moment, for instance, pending settlement of the enemy share question, which, we believe, is now receiving urgent attention at Capetown; the uncertainty of the ultimate result of the Genoa Conference, the eventual finding of the Mining Industry Board; the question of taxation, and so on. There is also the coming announcement of April profits, which we are led to believe will be a pleasant surprise in several cases.

With reference to the question of Stock Exchange hours, dealt with in our last issue, a correspondent writes as follows:—

It is reported that official circles have under contemplation the changing of the date of "Union Day" from 31st May to 1st May, which, from many points of view, would appear a most excellent suggestion. Notwithstanding the fact that the majority of Stock Exchange members have vetoed the proposal for an extension of working hours, it is strongly apparent that such a change would be welcomed by the public and would be not only greatly in the interests of London business, but also in the interests of a large section of those men who in times past have shown a desire to do business late in the afternoon. I am more than ever convinced that such a change should take place at an early date.

[Is this to be taken seriously? And if this is done, why not substitute Boxing Day for Good Friday and make Sunday a Thursday?—Ed. *S.A.M. and E.J.*

	Fri. 28th.	Sat 29th	Mon. 1st	Tues. 2nd.	Wed. 3rd	Thurs 4th.
Anglo Am. Corp.	19 9*	19 9	19 6*	19 7*	19 9*	20 0*
Apex Mines	6 6*	6 9		6 0*	6 6*	6 3*
Bantjes Cons.	6 4*	6 3*		6 8†	6 4*	6 8*
Brakpan Mines	45 0*	45 3*	45 0	45 6*	45 0*	46 0*
British South Africa		12 0*				
Bushveld Tins	0 3*	0 3*	0 3*	0 4*	0 3*	0 3*
Cinderella Cons	2 3	2 3*	2 3*		2 3	
City and Subs.	2 2*	2 3	2 3*		2 0*	2 0*
City Deeps	41 6*	41 9*	43 0†	41 0*	41 3*	42 0*
Clydesdale Colls.		20 9*			20 9*	21 0*
Con. Diamonds	14 0	13 7*	13 6*	13 10	14 0*	14 0*
Con. Investments	24 0			23 0*	23 3*	
Con. Langlaagtes	14 0*					
Con. Main Reefs	10 0*	10 0*	9 9*	9 9*	10 3	10 3
Con. Mines Select			14 0†		11 0*	13 0†
Coronation Freeholds			0 7*	1 0†	0 6*	
Do. Syndicates	4 6*	4 3	4 6*	4 6*	4 6*	4 6*
Crown Diamonds	5 9*	5 11	6 0	5 9*	5 9*	5 10
Crown Mines	35 0*	36 3†	35 0*	35 6†	35 0	35 6*
Daggafontein Mines	2 10*	2 11	2 10*	2 9*	2 10*	2 9*
E.R. Coals	1 6*	1 6*	1 6*	1 6*	1 6*	1 6*
E.R. Deeps	0 9*	0 9*		0 9*	0 9*	0 9*
E.R. Minings	10 9*				10 3*	10 9*
E.R. Props.	5 9*	5 9*	6 3	6 3*	6 3*	6 0*
E.R. Debentures	£82*	£85†	£85†	£85	£85†	
Eastern Golds	0 6*	0 6*	0 6*	0 7	0 7	0 6*
Ferreira Deeps	7 0*					
Frank Smith Dmds	3 6*	3 8	3 6*	3 6*	3 6*	3 6*
Geduld Props.	53 6	53 3	53 0*	53 9*	54 0	54 0
Glynn's Lydenburgs	12 0*				12 0*	13 6†
Govt. Areas	83 0	83 0	83 0*	83 3	83 6*	83 3*
Hume Pipes		13 0*	13 0	14 0	13 6*	13 9*
Jhb. Bd. of Ex.		33 0	36 3*			35 0*
Knight Centrals	4 3*	4 3	4 3*	4 3*	4 3*	
Lace Props.	7 6	8 0†	7 6*	7 6*	7 9	7 8*
Leeuwpoort Tins	6 9*	7 0†	6 9*	6 9*	6 9*	
Luipaardsvlei Est	1 6*		1 6*		2 0*	
Lydenburg Farms	5 0	4 9*	—	4 9*	4 10*	4 9*
Meyer & Charlton		60 0*			60 0*	
Middelvlei Est.	1 6*		1 6	1 6*	1 6*	1 8†
Modder Wests		0 7	1 0†	1 0†	1 0†	
Modder B.'s	28 10*	28 9*	29 0	28 9*	29 0*	29 0
Modder Deeps	42 0	41 9	41 9*	41 9	42 0*	42 1*
Modder Easts	7 10	7 7	7 9*	7 6	7 8*	7 9
Natal Navig. Colls		30 6	31 0*	30 0*	30 0*	30 5*
National Banks		220 0				
New Eland Dmds						22 6
New Era Cons.		6 3†	5 6*		6 3†	6 3*
New Geduld Deeps.	1 4*	1 4*	1 4*		1 4*	1 4†
New Kleinfonteins	6 0*	6 3	5 9*		6 0	6 0
New Modders	72 3	72 0	71 9*	72 0*	72 6	73 0
New Primrose			5 6*			5 6*
New Unifieds			4 9		4 3*	4 3*
New State Areas	28 9*	28 9	28 6	28 3*	28 6	28 3*
Nigels	—	6 0*	6 0*	6 0*	—	5 6*
Nourse Mines	11 6	11 6	11 9	11 6*	11 9½	11 3*
Pretoria Cements	42 0*	42 2*	42 6	42 3*	42 6*	42 6
Princess Estates	1 0*	—	1 1*	1 0*	1 0*	1 1*
Rand Collieries	0 9	0 9*	0 9*		0 9*	
Rand Nucleus	1 1*		1 1*		1 1	1 1
Rand Select. Corp			50 0†	50 0†		50 0†
Randfontein Cent.		10 9†				
Do. Estates	15 10*	15 9	15 7*	15 6*	16 1½	16 3*
Rouxville Diamonds	1 0*	1 0	1 0*	1 2*	1 1*	1 2*
Roberts Victors	8 6*		8 6*	8 6*	8 6*	8 6
Rooibergs	3 0*	3 0*	3 9†	3 9†	3 3*	3 0*
Ryan Nigels						1 0†
Simmer & Jacks	3 3	3 3	3 3*	3 3*	3 3*	3 4
S.A. Breweries	25 6*	26 0*	26 0*		26 0*	
S.A. Lands	4 4*	4 4*	4 4	4 4	4 3*	4 3
Springs Mines	38 6*	38 0	38 0*	38 3*	38 0*	38 6
Sub Nigels	11 0	11 6	11 4½	11 3*	11 3*	11 3
Swaziland Tins	7 0†					
S.A. Alkali	12 6*	12 6*	12 6	12 6*	12 6*	
S.A. Townships	8 3	8 3	8 3*	8 3*	8 3*	8 4*
Transvaal Lands	17 6†					
Trans. G.M. Est	7 6*	8 6	8 9†		8 9†	8 9†
Transvaal Silvers	17 6*	17 0	17 0	16 6*	16 0*	16 6
Tudors		0 9†	0 9†	0 9†	0 6*	0 9†
Van Dyks	—	0 9*	—	1 0*	1 0*	1 0*
Van Ryn Deeps	62 3	61 9*	62 3*	61 9*	62 0*	62 9
Village Deeps	8 9*	9 0*	—	—	8 9*	9 0*
West Springs	8 9	8 7½	8 6	8 6*	8 6*	8 9
West Rand Cons.		2 6*	2 6*			
Western Rand Est.		3 7*	4 0†	3 6	3 7½	3 7
Witbank Colls.	39 0	39 6*	39 0*		39 6	
Witwatersrands					11 3*	11 0*
Wit. Deeps	10 6	10 6	10 6*	10 6*	10 6*	10 6*
Zaaiplaats Tins	1 8*	1 6*	1 6*	1 6*	1 4*	1 11*
Union 5 per cent.	£103½	£103½	£101*	£101*	£101*	£101¼*

* Buyers. † Sellers. a. Odd lots. b. Ex London.

Mining Men and Matters.

Mr. Normand, of the T.G.M.E., has left on a six months' visit to England.

* * *

Mr. John Martin, general manager of the Argus Company, and Mrs. Martin are visiting Europe.

* * *

Lieut.-Colonel W. B. Leane, M.C., M.I.C.E., has been appointed Chief Engineer to the Rhodesian railways in succession to Mr. G. R. Holgate who has retired.

* * *

Mr. J. L. Siddell, of the Central Mining Corporation, London, who returned to England recently after an extended visit to Johannesburg, is returning about the end of May for another six months.

* * *

Mr. J. Whitehouse (manager of the Village Deep) has been appointed to the consulting engineer's staff of the Central Mining Corporation during the absence of Mr. A. J. Brett in England. Mr. H. P. Townsend (underground manager) is acting for Mr. Whitehouse.

* * *

Mr. T. B. Glanville, secretary of the S.A. MINING AND ENGINEERING JOURNAL, left for England this week. Those interested in the forthcoming big special number of the Journal's Year Book can obtain information regarding its scope and aims by getting in touch with Mr. Glanville at the London offices of this paper, Byron House, 82-85 Fleet Street, London, E.C.4.

To Lower your Operating Costs:

A Lubrication Audit

Business to-day protects itself against waste and inefficient methods——by audit.

An audit gives an exact picture of present conditions, and points the way to improvement.

We would like to call to your attention the possibilities of a Lubrication Audit in your plant.

See details in column.

Only a Lubrication Audit can give you full information, and open the way to new economies which will soon be reflected in lower operating costs.

Present industrial conditions make it urgent that you take this step toward improved results at once. Ask our nearest branch to-day about the Lubrication Audit.

GARGOYLE

Lubricants

A grade for each type of service

THE LUBRICATION AUDIT

Explained Step by Step (in condensed outline)

INSPECTION: A thoroughly experienced Vacuum Oil Company of S.A. Limited, representative in co-operation with your plant engineer or superintendent makes a careful survey and record of your mechanical equipment and operating conditions.

RECOMMENDATIONS: We later specify, in a written report, the correct oil and the correct application of the oil for the efficient and economical operation of each engine and machine. This report is based on

(1). The inspection of the machines in your plant
(2). Your operating conditions.
(3). Our 25 years of lubricating experience with all types of mechanical equipment under all kinds of operating conditions.
(4). The outstanding experience of the Vacuum Oil Company in manufacturing oils for every lubricating need.

CHECKING:—If, following our recommendations in this audit, you instal our oils, periodical calls will be made to check up the continuance of the desired results.
For the above Free Service address our nearest branch office.

BRANCH OFFICES:

Cape Town
Kimberley
Port Elizabeth

Johannesburg
Bloemfontein
East London
Lourenco Marques.

Pretoria
Mossel Bay
Durban

VACUUM OIL COMPANY OF SOUTH AFRICA, LTD.

ROBINS-SCHERZER
Revolving Car Dumpers

¶ Designed and manufactured by the Robins Conveying Belt Company in conjunction with the Scherzer Rolling Lift Bridge Company.

¶ Built for several gauges, car sizes, and capacities the largest dumps 30 120 ton cars per hour.

¶ A Robins-Scherzer Dumper has been specially designed for service on the Railway Systems of Southern Africa. Its capacity is 30 trucks of 50 tons capacity per hour.

¶ The features of these dumpers are:

1. Low power requirements and power station current peak.
2. Gentle handling of trucks.
3. Minimum of breakage to material dumped.
4. No necessity for incline approach or "pig."
5. Safety and freedom from breakdown.

ROBINS CONVEYORS (S.A.), Ltd.
(Head Office: Robins Conveying Belt Co., New York U.S.A.)
BOX 4736, 'PHONE 4182, JOHANNESBURG

STANDARD BANK
OF SOUTH AFRICA,
LIMITED.
(With which is incorporated the African Banking Corporation, Ltd.)

Established 1862.

Authorised Capital - - - £10,000,000
Subscribed Capital - - - - £8,916,660
Paid-up Capital - - - - - £2,229,165
Reserve Fund - - - - - £2,893,335

GENERAL BANKING BUSINESS transacted at all Branches and Agencies; DEPOSIT and CURRENT ACCOUNTS opened; PURCHASE and SALE of INVESTMENT SECURITIES effected, etc.

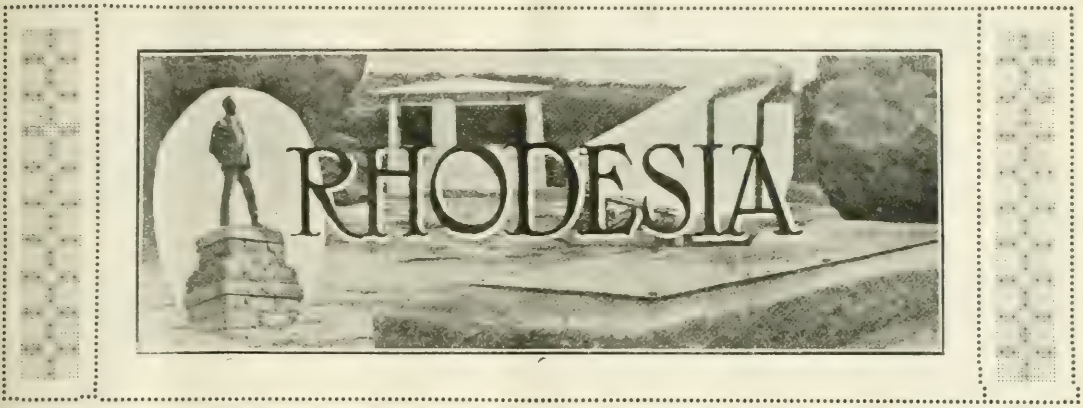
SAVINGS BANK ACCOUNTS opened on terms, particulars of which may be obtained on application.

The BANK is in close touch with TRADE and INDUSTRIAL CONDITIONS, both local and overseas, and special attention is given to COMMERCIAL ENQUIRIES from customers.

EXECUTOR and TRUSTEE business undertaken.

Over 380 Branches and Agencies in Africa.

Agents and Correspondents throughout the World.



OPENING UP THE ZEBRA MINE—MARCH MINERAL OUTPUT—"GOLD FIELDS" RESULTS—HOPE MINE SALE—THE RAILWAY CONFERENCE.

The Zebra Property.

Great attention continues to be devoted to the new developments on the Zebra property in the Hartley district, about which we continue to get inquiries (says the *Bulawayo Chronicle*). As we have announced, this appears to be a low grade gold deposit of extraordinary size, upon which the Gold Fields Rhodesian Development Company have an option and are doing extensive work to prove the values. There are said to be two or three engineers and some 60 natives engaged in these investigations, and it is stated that some 200 feet of work has been done and at least 400 feet more will be required to prove the property. Local information suggests that the testing of apparent values will be a very long busines. Should the property develop into a mine, it seems likely that the whole of the work can be done by quarrying, much as at Shamva. The hill is of considerable altitude, giving wonderful views of the surrounding country. Water is plentiful at no great distance, the Umfuli river running within a mile or so of the property.

* * *

March Mineral Output.

The following is a summary of mineral production in Southern Rhodesia, for March, 1922:

		Value.
Gold, fine oz.	54,643·22	£257,356
Silver, fine oz.	14,376·10	1,511
Coal (raised, 39,741 tons)		sales) 12,547
Do. (used for coke)		5,701
Copper (Blister), tons	273·08	16,385
Chrome ore	Nil	Nil
Asbestos, tons	436·58	15,579
Arsenic, tons	85·16	2,026
Mica, lb.	1,396	174
Total		£311,279

Asbestos.

Bulawayo District—	Tons.	£	s.	d.
Birthday, A. & B. (Willoughby's Con. Co., Ltd.)		3.997	12	3
Adjustment, May-Aug., '21				
Pangani (J. S. Hancock), Feb.	14·41	317	5	0
Do., March	13·98	279	11	5
Lomagundi District—				
Ethel (Union & Rhod. Trust, Ltd.)	23·00	575	0	0
Do., adjustments		·779	15	5
Victoria District—				
Gath's (R. & Gen. Asb. Corp. Ltd).	377·19	9,429	15	0
Sapientia (V. S. Welsford)	8·00	200	0	0
Total	436·58	*£15,578	19	1

*Includes £26,659 premium on gold.

March, 1922, and Comparisons.

Gold—	
March, 1922	54,643·22 fine oz
February, 1922	51,421·60 fine oz.
Increase	3,221·62 fine oz.
March, 1922	54,643·22 fine oz.
March, 1921	31,995·37 fine oz.
Increase	22,647·85 fine oz.
February, 1922	£304,488b
March, 1922	257,356a
Decrease	£47,132
March, 1922	£257,356a
March, 1921	134,931c
Increase	£122,425
Silver	
February, 1922	£2,564
March, 1922	1,511
Decrease	£1,053
March, 1922	£1,511
March, 1921	1,042
Increase	£469
Base Mineral Production—	
February, 1922	£214,837
March, 1922	52,412
Decrease	£162,425
March, 1921	£130,886
March, 1922	52,412
Decrease	£78,474
Total Mineral Production—	
February, 1922	£521,889b
March, 1922	311,274b
Decrease	£210,610
March, 1922	£311,279a
March, 1921	266,859c
Increase	£44,420

a—includes £26,659 gold premiums.
b—Includes £78,860 gold premiums.

c—No gold premiums, and three weeks' lock-out on all principal mines except Falcon and Cam and Motor.

The FAIRBANKS Company O.K.

LOOK FOR THE LITTLE O/K LABEL ON A VALVE AS YOU WOULD LOOK FOR THE HALL MARK ON SILVER———IT IS YOUR GUARANTEE OF QUALITY

FAIRBANKS VALVES

LARGE STOCKS ON HAND INCLUDE:—GATE VALVES, CHECK VALVES, SLUICE VALVES, SWING CHECK AND GLOBE VALVES——

SOLE AGENTS FOR SOUTH AFRICA

BARTLE & CO., LTD.,

LOVEDAY HOUSE. BOX 2466. 'PHONE 3553.
WIRES: "FAGGOT."

JOHANNESBURG

BOX 1228, DURBAN. BOX 444, KIMBERLEY.

USE

"PORPOISE"

BRAND

ANTIFRICTION GREASE

Used for years by the majority of Mines all over South Africa.

Manufactured by

South African Lubricants & Chemical Works, Ltd.,

DURBAN & JOHANNESBURG.

Phone 1618, *Johannesburg Branch Office.*

Approved by Mines Dept., Home Office and Board of Trade

THE "PROTO"

SELF-CONTAINED OXYGEN BREATHING APPARATUS ——

for Rescue and Recovery work in Mines after Explosions, etc.

ADOPTED BY ALL THE PRINCIPAL RESCUE STATIONS IN THE UNITED KINGDOM, AND BY MANY COLONIAL AND FOREIGN GOVERNMENTS

SMOKE HELMETS of various patterns.

For Gob Fires and other Short distance work in Collieries.

Simple. Light. Portable.

THE "NOVITA" OXYGEN RESUSCITATION APPARATUS FOR THE APPARENTLY ASPHYXIATED.

RESPIRATORS FOR ALL PURPOSES. OXYGEN COMPRESSION PUMPS. GAS ANALYSIS APPARATUS. ELECTRIC LAMPS, Etc.

SIEBE, GORMAN & CO., LTD. "NEPTUNE" WORKS and
187, WESTMINSTER BRIDGE ROAD, LONDON, S.E.1, ENGLAND.

Cables: "Siebe, London." Codes: A.1, A.B.C 5th, Western Union, Bentley, Lieber, Marconi, Engineering and Private.

Gold Fields Rhodesian Development Company, Ltd.

March, 1922, returns are as under:—

Falcon Mines, Ltd.—Plant crushed, 16,534 tons; blister copper produced, 277·841 tons; gold produced, 3·010 oz.; silver produced, 6,215 oz.; estimated value of output, £29,570. In addition to above, an amount of £2,136 was recovered from Customs ore treated at the mine during the month of March. In the above output copper has been valued at £60 per ton.

Shamva Mines, Ltd.—Plant crushed, 59,000 tons; total value of yield, £31,939. In addition to above, an amount of £357 was realised on slag.

Slate-Arcturus Mines.—Plant crushed, 6,020 tons; total value of yield, £10,008. The above includes an amount of £225 realised from chips treated at the Falcon Mine.

Crescens (Matabele) Mines and Land Co., Ltd. (Verocity Mine Tribute).—Plant crushed, 700 tons; total value of yield, £889.

Exploring Land and Minerals Co., Ltd. (Moss Mine Tribute).—Plant crushed, 838 tons; total value of yield, £1,790.

Gold Fields Rhodesian Development Co., Ltd. (Owl Mine Tribute).—Plant crushed, 751 tons; total value of yield, £1,146.

Asp Gold Mining Co., Ltd. (Asp Mine Tribute).—Plant crushed, 1,238 tons; total value of yield, £1,123.

In the above the price of gold is taken at £4·21 per fine ounce, and the total value of the outputs produced by the Gold Fields Rhodesian Development Co., Ltd., and its subsidiaries during the month of March amounts to £81,958.

* * *

Hope Mine Sale.

Mr. R. W. Albertson is to hold an important sale of mining machinery and equipment on Tuesday, May 9, at 10 a.m., on the Hope Mine, Umsweswe. The list includes a 5-stamp Sandycroft gravity mill, a Marshall engine, 30 and 16 horse-power boilers, 2 hoists, crusher, amalgam barrel, dynamo, a number of pumps, rails, piping, buildings, also oxen, wagons and Scotch carts, together with a very large variety of sundries, including safe, mining tools, cyanide plant, and a very complete workshop full of tools.

* * *

The Railway Conference.

The chief feature of the proceedings at the recently-held Railway Conference was the speech by Colonel Birney, General Manager of the Rhodesian Railways. This was very satisfactory in relation to both the railways and the territory. It showed that while the earnings had increased by 24 per cent. the operating expenditure rose by only 17 per cent., and there was a balance of earnings over total expenditure of £110,000. This is accounted for by a reduction in the fixed charges such as was not anticipated when the railway budget was framed. As to how this surplus may be applied, Colonel Birney hopes for a making up of arrears on the renewals of permanent way and rolling stock, which, of course, means the giving to us of still more efficient railways. As to the point that, in view of this result, rates need not have been pitched so high, it must be observed that revenue, thanks largely to the Congo traffic, was maintained above the expected figure. Colonel Birney is optimistic alike as to the traffic and the possibility of reducing expenditure. This latter is associated with the wage reductions, as to which he shows that they have been received in good spirit by the men, though entailing no small individual sacrifice. For the rest, the lines are being further improved, which should add to the public facilities as well as to the security of the railway workers' positions, and render more surely possible an extension upon the broad scale of those financial advantages to the public which are being so notably granted in directions which give relief in the present trying times. The General Manager's speech does seem to promise much relief in this respect as soon as the railways have completed the programme that is now being drawn up of a definite policy over a fixed and stable period.

* * *

CAPE TO CAIRO LINE.

Approximate Date of Completion.

In course of an address before the Central Asian Society on "The Cape to Cairo Railway, from the point of view of African development," Mr. Robert Williams, the guiding spirit of the Tanganyika Concessions group, paid a tribute to the early part played by Asiatics in exploring Africa. He outlined the progress of the Cape to Cairo line and stated that the railway had now reached Bukama, on the navigable Congo, with the result that to-day one could travel from Capetown by train and river steamers to Stanleyville, a distance of 3,600 miles, of which 3,000 miles was railway. Meanwhile, continued Mr. Williams, another transcontinental railway, traversing Africa from West to East, had been simultaneously coming into being, namely, the Benguella Railway, which, with the co-operation of the late King Leopold and of the Belgian Government, he himself initiated some twenty years ago, and but for the interruption caused by the war, would have already been connected with the Cape to Cairo Railway. In about four years these railways would be connected and it would then be possible to cross Africa from Lobito Bay on the west coast, to Beira or Mombasa on the east, or at its junction with the Cape to Cairo line to run southward to the Cape or northward towards Cairo.

The Lonely Reef Gold Mine, Matabeleland, where substantial economies have been effected through the employment of gas engines. The matter is referred to in our Engineering Section.

Heavily Mineralised Zone.

It had long been his desire, he continued, to arrange for the systematic investigation of the Sudanese side of the Nile Congo Divide in the hope that possible mineral discoveries would attract the Sudanese Railway southwards to complete the big link between the Cape and Cairo, and thus at last realise Cecil Rhodes' dream. The opportunity presented itself, and during the past year an expedition under Major Christy had been at work exploring this least known of all the great African Divides. The expedition had now returned, bringing with it a vast amount of information, much of it of a most encouraging nature. There were plentiful indications of yet another heavily-mineralised zone, and he was hopeful—he could not say more at present—that the further investigations now undertaken would succeed in locating deposits sufficiently large and rich to justify the extension of the Sudanese Railway southwards to meet an extension of the Uganda Railway. Ten or twelve years hence, therefore, would probably witness the completion of the great Trunk Railway line from north to south, popularly spoken of as the Cape to Cairo Railway.

TRADE AND INDUSTRIES SECTION.

Week in the Mining Material and Engineering Trades.

BUSINESS STILL QUIET BUT HOPEFUL—IRON AND STEEL—TIMBER AND BUILDING MATERIALS ELECTRICAL GOODS—AMERICAN NOTES—DELAGOA BAY HARBOUR IMPROVEMENTS—AFRICAN OIL CORPORATION—ROBINSON DEEP'S ANNUAL MEETING—NEED FOR LOWER WORKING COSTS DEMONSTRATED—FINANCIAL.

General.

The past week, curtailed by Monday's holiday, has shown little or no improvement as far as business is concerned over the previous one. Things were quiet on the Commercial Exchange and did not reach that level and volume which it was generally expected we should witness soon after the settlement of the recent labour troubles. This week's canvass of the commercial community elicited the fact that merchants had abated somewhat of their apparently well-founded optimism of a rather quick recovery of business conditions without in the least abandoning their conviction that we had at long last seen the worst of our troubles—in other words, people are now post-dating their expectations regarding the probable time of the long-looked-for advance in business by some months. But even the most pessimistic among them allow that the turn of the half-year should see a decided improvement in this respect, and the opinion is practically unanimous that towards the end of the current year we should be well on the road to permanent improvement. It is, however, now generally admitted that sufficient importance was not given to the probable effects on the mining industry by the recent dislocation, nor was perhaps the full effect of the repatriation of so many thousand natives and the difficulties attending their return fully recognised. The opinion now is that although we may (as is Johannesburg's wont) have been rather premature in our optimism, the grounds for good and solid improvement are now more apparent than they have been for a very long time, and that it is only a matter of time before we harvest what we have so long and patiently waited for. In the opinion of one of our foremost commercial men—a busy and very successful member of the community, but who like other really big men still finds time to discuss matters with other than clients—there is a feeling abroad that matters inimical to the future well-being of the community—as regards the workers—are not being fully appreciated by the powers that be. It would, he said, be difficult to give concrete examples, but the feeling in commercial circles is that if more elastic and sympathetic treatment of the problems presently being threshed out was evidenced we should sooner see a reconciliation of our difficulties. Asked as to his opinion of the present Conference at Genoa, he voted at once, after explaining the difficulties of the situation as he saw them, for Britain glueing to France, both on account of our geographical situation and the natural desire of our ally to dispose once and for all of further aggression on the part of Germany. He said the treaty between Russia and Germany had undoubtedly been a blow to Mr. Lloyd George's hopes regarding the reorganisation of Europe, but, although not a countryman of his, he had sufficient faith in his statesmanship to believe that he would still come out on top in his usual fashion and secure the strived-for ideal. My informant added that of course native labour is weekly being reinforced, and within measurable time the industry will get its full complement, and with it, of course, will go the employment of the white workers. In the meantime we must wait with as much patience as we can command, knowing that although slow our progress will daily improve. Prices are still inclined to sag a little and are the right ones for consumers, enabling them to get on with the numerous important big things now pending.

Iron and Steel.

A leading merchant said he had done more business last month than for quite a time. The mines are buying more freely, and business from outside districts is encouraging. There is an increased demand for steel plates, prices of which are firming up. Although quiet again this week, said an important merchant, there is still a noticeable improvement in general business. He was very optimistic about the future, and thought that by the end of the year we should see a big improvement in business conditions here. Another influential importer of mining material said it was true that things were at the moment rather quiet and very little being done on the Commercal Exchange, but for all that signs were not wanting that an improvement in general business conditions had already set in, and he thought that we should see something like normal affairs in from three to four months; prices had at any rate reached a level which was the lowest that had ruled for some considerable time.

Latest Quotations.—Dunswart iron, 22s. per 100 lb. basis price; Union Steel Corporation, Ltd., 25s. basis; imported iron and steel, flats, rounds and squares, from 28s. 6d. to 35s.; channels and joists, 30s. to 32s. 6d.; imported angles, 32s.; smaller sizes, 33s. 6d.; tee iron, 32s.; shafting, ½ in. down to 3-16 in., 7½d. to 9d. lb.; ⅝ to 1½ in., 6½d.; 1¾ in. to 6 in., 5½d.; steel plates, 1-16, ⅛, 3-16, 23s. 6d.; 10 x 5 and larger, 25s.; spring steel, 7½d. to 8½d. lb.; bolts and nuts, hexagon, round, ⅜, 8½d. to 9¼d. lb.; ½ in., ⅝ and ¾, 40s. to 45s. per 100 lb.; hexagon nuts, ⅜, 8½d.; ½ in., ⅝ and ¾, 7½d.; fish plates, bolts and nuts, ⅜ in., 8d. lb.; ½ in., 6d.; ⅝ in., 5½d.; ¾ in., 5d.; dog spikes, 35s. per 100 lb.; rivets, ¼ in., 11d.; ⅜ in., 9d.; ½ in. and ⅝ in., 37s. 6d. to 40s. per 100 lb., ⅜ in. 50s.; brass rods, ¼ in. 1s. 5d.; ⅜ in. 1s. 3d.; ½ in. 1s. 2d.; ⅝ in. upwards, 1s. 1d. per lb.; hexagon brass rods, 1d. lb. extra; copper rods, ⅜ in., 2s.; ½ in., 1s. 11d.; ⅝ and upwards, 1s. 9d. lb.; tool steel, 2s. 11d. to 3s. 3d.; brass sheets, 1s. 10d. to 2s. lb.; copper sheets, ¼ in. to 18 gauge, 1s 10d. lb.; 20 gauge, 1s. 11d.; 22 gauge to 28 gauge, 2s. lb.; firebox copper, 2s. lb.; copper tubes, ¼ in., 3s. 3d.; ⅜ to ⅝ in., 2s. 6d.; ¾ to 4½ in., from 2s. to 2s. 4d. lb.; phosphor tin, 2s. 11d.; ingot tin (Lamb & Flag), 2s. lb.; ingot lead, £28 per ton; drill steel, 6½d.; hollow, 9¾d.; 1¼ in., 9d. to 10½d.; wire nails, 30s. to 35s.; shovels, 30s. to 40s. doz.; wheelbarrows, 40s.; picks, 37s. 6d. to 50s.; pick handles, 19s. 6d.; hammer handles, 14 in., 7s. 6d.; 18 in., 9s. 6d.; 24 in., 13s. 6d.; 30 in., 17s. 6d.; 36 in., 25s.; barbed wire, "Shorthorn," 69 lb., 13½ gauge, 22s. per coil; plain galvanised fencing wires, No. 8 gauge, 100 lb. coils, 21s. 6d. per coil; No. 10 gauge, 100 lb. coils, 24s. 6d. per coil; No. 12 gauge, 100 lb. coils, 26s. 6d. per coil; bulb tee fencing standards, 14 lb., 19s. 6d. per dozen; 12 lb., 23s. 6d. per dozen; black baling wire, 14 gauge, 19s. per coil, 100 lb.; 12 gauge barbed wire, 22s. per coil, 96 lb.; plain wire, No. 8 galvanised, 21s. per coil, 100 lb.; fencing standards, 12 lb., 20s. per dozen; droppers, 4 ft., 1½ lb., 3d. per dozen; screening, 3s. to 9s. 6d. per sq. yd.; cyanide, 1s. 7½d.; zinc shavings, 1s. per lb.

Second-hand Machinery.

Business in second-hand machinery and spares has been somewhat slow since our last report; certain orders for second-hand material in the way of spares are continually going to the mines, and the latter will not miss any spares suitable and which are offered to them cheap. There is, said a prominent dealer, a good deal of piping about just now of all sizes, which is gradually being picked up by the many companies which are increasing their plants, and there is no getting away from the fact, he said, that this commodity will be dearer very shortly, as there is not much being imported just now. There is, he further added, great activity on some of the old dumps along the Rand, and the mines on the southern reefs are now being exploited. There are, in addition, some very good things offered in town just now in the way of gold properties north, which means, of course, business for the second-hand dealer in machinery, and he predicts a good deal of business very shortly, and thinks that when requirements now and for the future are offered cheap it is advisable to take advantage of such opportunities and secure them promptly. There is very little inquiry for second-hand rails just now. One second-hand dealer here has a very large quantity of these as good as new, which are going very cheap. Boilers and engines are always in demand for industrial, agricultural and also mining purposes; and are always a saleable line.

A non-ferrous alloy, christened "Virtu," has, it is announced, been evolved, and is causing considerable stir in the metallurgical world. The new metal is said to cost less than half the price of stainless steel, and tests have proved that it can be cold rolled and cast. The inventors hope to prove that it can be forged or hot rolled, like steel, in which case it could be applied to many purposes for which steel is now used, and to fittings liable to corrosion through exposure.

Port Elizabeth's New Electric Power Plant.

The City Council has accepted orders for a new electric power plant to the value of £52,000, which will double the present capacity of the power station. The tenders accepted, it is gratifying to note, are all British and are about one-third less in cost than those estimated when the scheme was drawn up in 1920.

South African Railways Electrification.

The High Commissioner, London, is advertising for tenders for steel work for the power house to be erected in connection with the electrification of the main line between Maritzburg and Glencoe. Tenders are returnable in London by 29th June.

British Engineering Strike.

Mr. Chamberlain announced last week in the House of Commons the appointment of a Government Court of Inquiry, prior to which the engineering employers intimated their decision to open their workshops this week to men willing to accept the terms hitherto rejected by the unions and to enter into negotiations with the unions when the employers' memorandum was accepted. The engineering unions have unanimously decided to instruct members not to resume work on the employers' conditions. Matters, therefore, are still at a deadlock.

Timber and Building Materials.

Business in timber during the past week has been fair, but has shown no outstanding features. Stocks are good; 3 x 9 deals are very firm, as are also prices of timber arrivals from the Baltic. In the building trade things have to be reported as very quiet; nothing large in the shape of contracts is as yet under weigh, although a revival in building operations is thought not unlikely within a few weeks.

Timber prices.—3 x 9 deals, 1s. 1d.; scantlings, 10½d.; beaver boards, 4¼d. to 4½d.; floorings, 6¼d. to 6½d; ceilings, 4¼d. to 4½d.; Oregon, 5s. 6d. to 6s. 6d. a cube; pitch pine, 7s. 6d. to 8s.; corrugated iron, 8d. to 10d. Furniture timber: Burmah teak, 17s. 6d. per cube here for first quality, 14s. 6d. for second at the coast; American oak, 1 in., 10½d.; 1½ in., 11d.; 2 in., 11½d., at coast; and Japanese oak, 1 in., 1s. 1d.; 1½ in., 2 in., 1s. 2d., at coast; West African mahogany, 1 in. to 4 in. thick, 26s. 9d. to 27s. 6d. per cube at coast; Rhodesian mahogany, 9s. per cubic foot at mills; Honduras mahogany, 30s. per cubic foot; American yellow pine, 1s. 6d. per foot of 1 x 12 here; American pine shelving, 10½d. per ft.; 3-ply wood, 3 m.m. up to 5 m.m., alder and birch, 4d. to 6½d. per sq. ft.; oak and teak, 3-ply, 11d. per sq. ft. Prices for bricks are practically unaltered at: Klompje bricks, 25s. per 100 at works; fire bricks, £10 per 1,000 at works; mixed, 70s.; wire-cuts, £4 10s. to £5; and £5 for pressed per 1,000, at kilns; columns from 20s. to 30s., according to size; roofing tiles, Marseilles, £25 per 1,000 at the works; chimney pots, 12 in., 7s. 6d.; 15 in., 9s.; 18 in., 10s. 6d.; dry red oxide, 16s. per 100 lbs.; white lime, 7s.; unslaked, 10s. 6d. per 180 lb. bag; 8 lb. bag, 1s.; blue lime, 4s. 3d.; blue plaster lime, 5s. 3d.; cement, 11s. 6d. a bag; damp course and roofing, 36s., 54s. to 55s. for 1 to 3-ply.

Second-hand Iron and Timber.

There is no change to report in this section; prices remain at about 6d. for iron and 8d. to 9d. for timber; stocks are still very scarce and business remains very quiet. One second-hand merchant who, as almost invariably the case, is not an Irishman said that in respect of wages to-day there was too little to live on and too little to die on, which in a sense can be understood. He thought that within three months we should see a move forward.

Durban Builders' Wages Reduction.

Wages of workers in the building trade in Durban have been reduced by 3½d per hour or 2s. 4d. per day, which means that Durban has now fallen into line with other centres, where such reduction was effected as and from April 1.

Electrical Goods.

A large importer of these reported this week a slow but decided recovery in business, both as regards the town itself and outside districts, and looks hopefully forward to improving conditions within a short time. Prices, he said, remain much about the same, but the tendency is not downwards; everything, he thought, at the moment pointed to higher prices. He was unable to speak of recent home prices, as these came to hand rather slowly, and in his opinion home merchants in the present unsettled state of European affairs were disinclined to enter upon basic alterations pending developments. All electrical dealers, he said, are now fully stocked in nearly all lines, and if their stocks are not abnormally large they are sufficient for present and probably immediate needs. He said that the present dissatisfaction in the building trade as regards wages was possibly a big cause for delayed development in trade at the moment.

American Notes.

Advices from Pittsburg state that production at 100 per cent. capacity, the goal of steel mills and other industries, has been achieved by the Half Mingo plant of the Carnegie Steel Co.—for the first time for a year and a half. Production generally from this district is running between 70 and 75 per cent. of capacity, which, with orders now in sight, is expected to be swelled shortly. Plans for firing additional furnaces, both by the United States Steel Corporation and independents, ensure further increases in the immediate future.

The Philadelphia and Reading Railway Co. has, it is announced, placed orders for 20,000 tons of steel rails for delivery during the last half of the present year. The Bethlehem Steel Co. has received orders for 10,000 tons of 100-pound and 3,000 tons of 130-pound rails. The Carnegie Steel Co. are manufacturing 5,000 tons of the 130-pound rails, and the Midvale Steel Co. 2,000 tons of the 130-pound type.

The Anaconda Copper Mines re-opened in February last.

The cash reserves of the banks reflect increases.

Coal Strike.

According to reports, there were on March 1 52,500,000 tons of bituminous coal in storage, which, at the rate of consumption prevailing in January and February, was estimated to be sufficient to last 43 days if evenly divided

Delagoa Bay Harbour Improvements.

In addition to the improvements noted as brought up to be introduced at Lourenco Marques in respect of the bunkering of coal, of which the chief contractors are Messrs. Head, Wrightson & Co. (S.A.), Ltd., and Messrs. Wright, Boag & Co., Johannesburg, the port authorities are going in for a further important work in the replacement of the present 60-lb. rails by 80-lb. ones on the main line. The material being now on the spot, the replacement should not take long to effect, and when once completed will enable the Portuguese Administration to run over the whole of the section of the through line trains carrying 1,200 tons of coal at a speed of 50 miles an hour. In addition to all this, and in anticipation of big trade developments, the authorities are now arranging for further eight electric cranes of huge capacity. The electrification of the railway lines within the wharf area is also under earnest consideration. With such equipment the port will be able to deal efficiently and expeditiously with the traffic, and the Portuguese authorities may with pride look upon their efforts to place Lourenco Marques in a foremost position.

Petrol Prices.

It is officially announced that the wholesale price of petrol has been reduced 2s. per case and paraffin 1s. per case.

Harnessing the Tides.

In this connection, to which we referred in a recent issue, the first experiment in the matter of harnessing the tides will shortly, it is announced, be made in France should the Chamber pass a Bill now being introduced by the Minister of Public Works for the construction of a tidal power station at Aber-Wrach. In this place, which is a little village in Brittany, on a long and narrow inlet of the Atlantic, through which the tide pours with tremendous force, it is proposed to build a dam, 500 feet long across the inlet and to construct a series of reservoirs, the water from which is to drive turbines of 4,800 horse-power.

British Telephone System.

With the opening recently of the new underground telephone cable between London and Manchester the English telephone system took a big step forward in efficiency. The feature of the new cable, which ensures clearness of communication and freedom from interruption by storms, is the thermionic valve which has influenced wireless telegraphy so profoundly.

Wireless Progress.

The Marconi Wireless Company announces that in agreement with the Radio Corporation of America, the Compagnie Generale Telegraphie Sansfil and the Gesellschaft Drabtlose Telegraphie, a number of new international wireless systems will shortly be opened.

Municipal Tramway Receipts.

The return for the week ended April 22 shows that the total receipts were £11,587, as compared with £11,734 for the corresponding week of last year.

S.A. Railways Earnings, Week ended April 15.

These were £379,748, as compared with £430,969 for the corresponding week of last year. The receipts for the harbours amounted to £16,914, as compared with £19,350 for the similar period of 1921.

Financial.

A New Zealand 5 per cent. loan of £5,000,000 has just been recently successfully issued.

Trade Conditions.

Latest reports from London are that the improvement in trade continues and that distinctly better accounts are being received from industrial centres. The Bank rate was reduced to 4 per cent. on April 13 and is now ½ per cent. below New York level. Money is very easy at 1½ to 2 per cent. and discounts rule between 2¼ and 2½ per cent. There has been a very strong upward movement in all important sections, including industrial shares. It is confidently expected that the turn in the investment market will also mean a turn in general conditions. Mining shares have generally appreciated.

Diamond Fields Exploration.

This company is about to issue 300,000 shares of 2s. 6d. each at par.

Metal Quotations.

London, May 1.—Standard copper, £59 15s. cash, £60 7s. 6d. forward; electrolytic copper, £64 10s. cash; £66 10s. forward; standard tin, £150 10s. cash, £152 17s. 6d. forward; foreign lead, £24 cash, £23 forward; quicksilver, £10 17s. 6d.; bar silver, 34⅞d.; bar gold, 93s. 3d. per oz.

The Week's Meetings.

THE AFRICAN OIL CORPORATION, LIMITED.

LATEST DEVELOPMENTS.

ROYAL DUTCH SHELL OPTION.

FUTURE OF THE INDUSTRY.

The second ordinary general meeting of shareholders in the African Oil Corporation, Limited, was held in the National Bank Buildings, Johannesburg, on Friday, the 28th April, 1922, at 3 p.m.

Mr. Arthur Pratt, the chairman of the company, presided.

The Chairman, in moving the adoption of the reports and accounts, said:

Gentlemen,—Before dealing with the operations of the company during the period under consideration I will review the accounts to 30th November, 1921, which are before you.

The expenditure on prospecting amounts to £4,383 16s. 1d., of which sum up to the 30th November last there was owing to us by the Anglo-Saxon Petroleum Company the sum of £1,222 1s. 7d.

The issued capital has been increased by £13,500, which represents 27,000 shares issued at par for cash during the year.

The cash on hand at November 30th amounted to £16,160 19s. 5d., and there was owing to the company, which will be recovered, the sum of £1,225 16s. 7d. The general expenses, after taking credit for interest on fixed deposits, etc., amounted to £718 18s. 8d.

Result of Negotiations.

At the last general meeting you were informed that negotiations were taking place with the Royal Dutch Group with a view of getting that concern and its associates to interest themselves in our property. You were also informed that an engineer appointed by that group was then on his way to South Africa with a view of making a preliminary report in order to advise his company whether or not the property in his opinion was worth investigating on their behalf. Mr. Van Tijn, the engineer in question, arrived very shortly after our last general meeting and at once proceeded to the property. As the result of this preliminary investigation, which was of a very thorough nature, an agreement was arrived at between the company and the Anglo-Saxon Petroleum Company, an off-shoot of the Royal Dutch Shell Group, under which agreement the Anglo-Saxon Petroleum Company was given the option for twelve months from May 31st, 1921, to acquire our leases over the farms Kromhoek, Ijzermijn, Goedgevonden and Virginia, and all the buildings and other assets thereon belonging to us, and also the claims known as the Pongola Bush.

In the event of the option being exercised the agreement provides that there should be paid to this company fully paid shares to the value of £200,000 in the new company to be formed. The new company to have a working capital of £500,000, one half of which would be offered to us at par. The management of the concern would vest entirely in the Royal Dutch Shell Group, but provision would be made for representation on the board by two directors to be nominated by ourselves. The agreement entered into further provided that we should be responsible for half the cost of prospecting operations carried out during the period of the option up to an amount not exceeding £5,000. It was considered very advisable by your board that this provision should be made. It made us during the currency of the option partners with the option-holders in the investigation work and consequently gave us perfect freedom of access to the property and a right to investigate the prospecting operations at every stage, and if the occasion arose, to criticise the method adopted to prove the value of the property.

The Utmost Harmony.

We have found that this arrangement has worked exceedingly satisfactorily the utmost harmony has existed between ourselves and the representative of the Royal Dutch Group and we have been kept informed through association with Mr. Van Tijn, through visits of the company's consulting engineer, and through personal visits of the directors, with every step that has taken place in connection with the development of the properties from the time the Royal Dutch Group assumed interest therein.

The work of determining the extent of the outcrop and the values of the shale both at the outcrop and after driving adits for distances varying from 50 feet to 100 feet was continued by the Royal Dutch representatives on lines similar to those which the company had up to that date adopted. All surface work was completed about two months ago and the result up till then can be summarised in the following manner: The numerous assays made by a testing plant put down by the Royal Dutch engineer show that whereas at the outset they had looked for an average return of 25 gallons to the ton of crude oil, the results so far exceeded this estimate that by increasing the mining width of the seam by including in this width a portion of blaes known to be practically barren, a return of 30 gallons of oil per ton could be looked for. Subject to boring operations proving that the value of the shale at depth was similar to that at the outcrop, the farms Virginia, Kromhoek, Ijzermiin and Goedgevonden contained approximately 13,000,000 tons of shale. It further transpired that the object of the Royal Dutch Group was to satisfy themselves that the property contained sufficient shale to feed a plant capable of treating 1,000 tons a day for about 40 years.

Boring Begun.

The surface work having been completed boring was at once commenced. The first borehole was disturbed by dyke intrusions in the immediate vicinity of the shale horizon and consequently shale was not encountered in this hole. The point selected for the second borehole was the extreme southern boundary of Goedgevonden, being the farthest point away from the outcrop. this borehole was started in very high ground and at a depth of about 650 feet our shale seam was encountered. The strike took place within a very few feet of the point originally estimated by Mr. Van Tiin. It was found that at this point the shale had undergone a very startling change. In fact the body struck in the borehole could not correctly be called shale but was simply blaes and the assays proved that oil was entirely absent therein.

This necessitates a reconsideration of the payable tonnage available and to determine this most important point a series of boreholes are now being put down between the last borehole and the outcrop to determine at what point the shale ceases to be payable. When this point has been determined it will be possible to form reliable estimates of the amount of payable tonnage the properties contain and until this is settled it is impossible for the Royal Dutch Group to arrive at any decision with regard to our property.

Mr. Van Tijn has expressed the opinion that approximately one half of the payable tonnage previously estimated will have to be cut out.

Unexpected Extension.

As a set off to this an unexpected extension of the outcrop on Ijzermijn has recently been discovered which should add appreciably to the payable tonnage, but sufficient work has not yet been done at this new point to determine with any degree of finality what bearing this will have on the company's prospects.

Whatever the result of the boring operations may be—one thing is evident. If the Royal Dutch Group are going to make it a sine qua non that they must have available before exercising their option sufficient payable shale to treat 1,000 tons per day for 40 years, more ground must be acquired than the company at present owns. To meet this possible position we have on very favourable terms secured control recently of a company owning contracts over farms adjoining our present holdings. These farms, we believe, contain sufficient shale which taken together with the shale in the farms at present controlled by us will make up the necessary tonnage to satisfy the expected requirements of the Royal Dutch Group.

Whatever may be the outcome of our present negotiations with the Royal Dutch Group it has been clearly demonstrated that our present properties contain a vast body of payable shale, and if events should prove that the concern is not of sufficient magnitude to induce the parties at present interested to exercise their option there is certainly sufficient shale to keep going for many years a plant equal to any unit owned and successfully operated by any individual shale company in Scotland and consequently of sufficient importance to attract attention of financiers who do not desire quite such an ambitious programme as the Royal Dutch Group. In making these remarks I have no reason to suppose for one moment that the Royal Dutch Group will not conclude business with us. On the contrary, everything points to a keen desire on the part of that group to find in our property justification for exercising their option and founding an oil industry in South Africa. The remarks that I have made are prompted by the fact that before we meet again at an ordinary general meeting the Royal Dutch Group will have declared themselves one way or the other and it is my wish that should the option not be exercised, the shareholders should know that far from considering that the company's career has been brought to an end thereby, we are satisfied that we have sufficient proof of the value of the company's property to demostrate that it is only a question of time when the necessary working capital will be found. Care will be taken to keep the company in a sound financial position.

Government Attitude.

From interviews I have had with various Government Departments during the year, I am satisfied that we shall find the Government a hearty co-operator in furthering the establishment of an oil producing industry in this country, but naturally before embarking on the capital expenditure which this co-operation will entail, the Government must be assured that having done their share the necessary working capital is available to complete the programme so far as the company is concerned and bring the property to a producing stage.

Before concluding I should like to make one or two comments on the necessity for shareholders exercising patience in connection with the company's affairs. These observations are prompted by remarks that have been made to me from time to time from shareholders who seem to think that the progress made in connection with the work is not sufficiently rapid. We are engaged in exploiting and endeavouring to found an entirely new industry in this country. So far we have been, and still are for that matter, groping for data to prove that we have a proposition of sufficient magnitude to attract the not inconsiderable capital necessary to bring the company to a producing stage. The work of investigating must necesssarily be slow and consequently will appear tedious to the anxious and expectant shareholder, but it must be borne in mind that every step taken must be carefully considered beforehand and anything in the nature of haphazard exploitation work or actions resulting from inconsidered haste can only work against us and put us back. Whatever the feelings of shareholders on these matters may be, individually, I want you to bear in mind that the burden and anxiety of it all really rests on the board, and I can assure you that this burden and anxiety is by no means inconsiderable. Even the delay has its advantages, however, the oil shale industry is attracting attention in many countries at the present time and this is resulting in improvements in method of treatment which make both for greater efficiency and decreased capital outlay. We are keeping closely in touch with what is going on in other parts of the world in order that the fullest possible advantage may be taken by us of the scientific investigations by others in developing an industry which is destined to attain a degree of importance which was not considered possible a few years ago.

The reports and accounts were adopted.

The retiring directors, namely, Messrs. Arthur Pratt and Isaac Myers, were re-elected.

ROBINSON DEEP, LTD.

PREMIUM ON GOLD.

Year of Financial Progress.

At the ordinary annual general meeting of shareholders in the Robinson Deep, Ltd., held on the 28th April at the Consolidated Goldfields Building, Fox and Simmonds Streets, the premium on gold was advanced as the factor that had determined the profit made by several of the mining companies.

In moving the adoption of the directors' report and accounts, the Chairman, Mr. D. Christopherson, said :—

Gentlemen,—The accounts for the year ended December 31, 1921, which are now before you, show that the financial effect of the year's operations is an improvement in the cash position of the company amounting to £45,291, arrived at as follows :—

The total profits amounts to £187,670. In addition, sales of freehold realised £6,896, thus making a total of £194,566. From this has to be deducted : Interest on loans, taxes, exchange on advances, £36,714; expenditure on equipment and shaft sinking, etc., £112,561, thus totalling £149,275, leaving a net improvement of £45,291. The profit on working was £179,000, the average price of gold realised for the year being approximately 105s. per fine ounce as compared with 112s. in 1920. The premium on gold during the year amounted to £218,883. Thus it will be seen that had gold realised par value a loss on working of some £39,000 would have been incurred and, instead of the cash position of the company having been improved, the position, after meeting all capital expenditure, etc., would have been that the year's operations would have resulted in a deficit of £173,000.

The most recent sales of gold have been made at approximately [illegible] per fine ounce, or [illegible] an ounce less than the average price realised last year. If this latest price is applied to last year's results, the profit of £[illegible] would have been reduced to £[illegible], which, after providing funds for interest on loans, taxes, etc., would have only left £14,000 towards the £110,000 spent on equipment and shaft sinking during that year. Hence this company is a good case in point to show how absolutely essential it is to reduce costs if mining operations are to continue, but I will refer to this later.

The Tonnage Milled.

The tonnage milled for the year was 70,000 in excess of 1920, due to a larger native labour supply and to improved machine stoping efficiency. This larger tonnage, whilst being a factor in the reduction of working costs from 29s. 2d. to 26s. 6d., or say 2s. 8d. per ton, was not the only factor by any means: improved efficiency in mining and development work largely contributed to this decrease.

In dealing with costs it will be of interest to shareholders to note that the costs per ton for 1921, namely, 26s. 6d., compares with 19s. 7d. for 18 months ended December, 1916, that being the first financial period of this company.

In the reports of both the superintending engineer and the manager, shareholders will find interesting information as regards last year's working, which it is unnecessary for me to repeat here.

To sum up, the profit made by the company was solely due to the premium on gold, which I think you will find was the case with a large number of other mining companies. Realising that this valuable factor could not be depended on to last, in fact was not likely to last, over any lengthy period, it became imperative for your directors, in conjunction with directors of other mining companies, to take measures to ensure as far as possible that the mining companies should be in a position to continue profitable mining with gold at par. And I would point out here that profitable mining in the case of this company cannot be measured simply by the figure of working profit.

The company has no capital funds, and, unless the working profit earned is sufficiently big to provide for the large sums which have still to be incurred on capital account for shaft sinking and for the development of the lower levels and to pay off the company's loan commitments, no real profit results.

Only Way to Make up for the Shrinkage.

There was only one way to make up for the shrinkage of future revenues from gold and that was to reduce working costs. So far as wages are concerned, with the price of gold rapidly falling and the increased cost of living as compared with 1914 also showing a large reduction, reconsideration would under any circumstances have had to be given to the cost of living allowance which was being granted over and above the standard rate of wages. It was also necessary to reconsider the form of contract for underground work, in view of the extremely high earnings being made, in some cases amounting to £200 per month and in still more from £100 to £150 per month.

But still more important was the necessity of putting the managers of the mines in a position to reorganise the underground work of the mines in such a way as to permit of economy in labour, both European and native. Hard as it was—there is no question that such reorganisation did mean throwing out of work a considerable number of men, but there was no alternative unless a very much larger number were to be out of work owing to many mines closing down.

I do not propose to dwell on the events of the last three months, nor as to how the strike was called when there were still four weeks left for further discussion before it was proposed to bring in the alteration of working conditions. I would, however, like to emphasise that it is a misuse of terms to characterise the upshot as a "victory" for the mining industry.

The industry was never out to win a "victory," and do not claim any such thing. What has happened is, that it had become a fact, not open to argument, that the certainty of falling revenues made it absolutely essential that the high level to which costs had risen had to be reduced unless a great portion of the industry was to be lost. We did our best to bring home the hard economic facts of the position to our workmen's elected leaders, but they would not be convinced and declared a strike.

After the strike had been on for some weeks, I am convinced that the majority of the men on strike realised that we were right and the strike would have ended but for the fact that the extremists and revolutionaries then took control. The revolution that followed was a challenge to the authority of Government, and its defeat was a victory for the forces of law and order.

The mining industry has certainly gained by the result to the extent that it is now able to bring into force the essential measures of reorganisation which are necessary to save its existence, but that it is able to do so is not due to the defeat of the revolution, which though grafted on to the strike had really nothing to do with it, but to the natural assertion of the hard economic facts of the situation, and it is not in the spirit of "victory" that the industry is now applying itself to its own reorganisation.

Peace Hoped For.

We now all most earnestly desire that everyone, more especially those working on the mines, will use every possible endeavour to remove any feelings of bitterness that may have existed during the strike and will strive for goodwill amongst all sections of workers. More especially do we hope that the native labour shortage will be made up as quickly as possible, in order that the mines can absorb a large number of good men who are still waiting for their jobs pending the natives coming in.

Now I will shortly deal with the prospects for the current year. From published figures you will have seen that for the first three months of this year a loss of £47,000 was made. This figure would have been greatly exceeded had it not been for the extremely hard and fatiguing work done by the officials under exceptionally trying conditions.

The loss also includes the interest on the loan for three months. Until the native labour force has been brought up to somewhere near the required strength, working conditions cannot be normal so for a month or two to come we cannot expect the mine to get into its stride. As you will see, the ore reserves now stand at 1,936,000 tons of an average value of 6·7 dwts. over a stoping width of 66 inches, equal to 442 inch dwts. Recent developments in the lower levels in the Booysens ground are very encouraging, most of the development being now confined to those areas.

Much Payable Reef.

It is somewhat pleasing to note that of the development footage of 18,000 feet accomplished last year, 10,000 odd feet were sampled, of which 78.6 per cent. was in payable reef indicating an average value of 18.3 dwts. over an average reef width of 30.5 inches, equal to 560 inch dwts. We hope, when the labour force becomes normal, to crush at the rate of 700,000 tons per annum, with a recovery of 26s. (taking gold at par). The profit therefrom depends entirely on working costs, but it must be the endeavour under normal conditions to work the mine eventually at certainly not more than 20s. This would give 6s. a ton profit.

Whatever gold may realise over and above par value will be to the good. On 700,000 tons per annum, at 6s. per ton, a working profit of £210,000 would be made; but against that there is £20,000 for interest on loan until it is repaid, and also an allowance must be made for profits tax and expenditure on renewals, say another £35,000; which would leave a net profit of £155,000—that is when the mine is in a position to work at full—out of which all capital expenditure and loan repayments will have to be provided. For the current year £115,000 capital expenditure has been authorised, against which at March 1 the company had £50,000 in hand.

Loan of £300,000.

The loan of £300,000 is due to be repaid at the end of this year, but it will be evident to you that the company will not be in a position to meet this liability. At the moment it is not possible to forecast what the financial position of the company will be at the end of the year, as it is impossible to say how quickly normal working conditions will be attained, but I certainly hope the present position will be maintained, if not improved. It entirely depends on how soon the native labour force is replenished and on the restoration of good feeling amongst all concerned in the working of this property.

For the same reason it is not possible to say when "A" shareholders may expect dividends to be paid out to them again, with the additional reason that this must also depend on what arrangement we can make for an extension of time over which the loan may be repaid.

In conclusion, I wish to record on behalf of shareholders our most sincere thanks to Mr. Turvey and his staff for the excellent services rendered during the last three months under, as stated before, most trying and difficult circumstances. More especially would I refer to the gallant manner in which, when the revolution broke out, although played out with the strenuous work they put in after General Smuts's appeal to re-start the mines, they took up their position to a man with the Government forces to defend that particular line of attack. In many cases during those critical days they had hardly an hour's sleep at a time. It was during the revolution that their pluck and determination saved a most dangerous position in that particular quarter—not only a dangerous position for the company's property, but also for the town of Johannesburg. Men of this fine type, thank goodness, are men who are able to let bygones be bygones, and can be depended on to give those working with them a fair and square deal without exhibiting any feelings that may at one time have existed during those past three months.

I now beg to move the adoption of the report and accounts.

The report and accounts were duly adopted, the retiring directors re-elected, and the retiring auditors re-appointed.

NOT only will 4810 Air Hose remain flexible longer than any other pneumatic hose made; it will positively outlast any other hose, both cover and tube are constructed to ensure this.

The cover of 4810 Air Hose is built to more than withstand all the punishment to which air hose is subjected. Its tube is made of the best oil-resisting compound yet developed.

4810 AIR HOSE

United States Rubber Co. (S.A.) Ltd.

(Late India Rubber Products Co. (S.A.) Ltd.)

Old Standard Bank, 65, Commissioner Street,

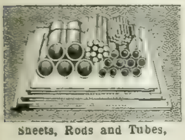
'Phone 4201. Tel. Add.: "IRPCOSA." Box 4945.

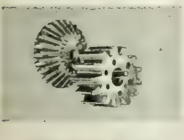
JOHANNESBURG.

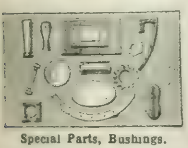
Diamond-Fibre

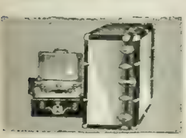
A Universal Raw Material.

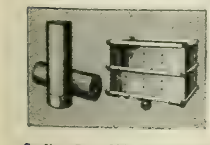
Diamond-F


Sheets, Rods and Tubes,


Silent Gears, Pinions


Special Parts, Bushings.


Trunks and Suit Cases.


Carding Cans, Mill Receptacles.

Diamond Fibre (a superior grade of hard or vulcanized fibre) is unlimited in its utility for manufacturing purposes. There is scarcely a mill or factory which cannot use it either as part of the manufacturing equipment or as part of the finished product.

Diamond-Fibre can meet more of the diverse and severe requirements of modern industry than any other material known. New uses are being discovered daily—uses that improve the manufacturers' product and decrease his production costs. This universal raw material is so unique in its possession of remarkable properties, that it cannot be likened to any other material.

Some of the uses to which Diamond-Fibre can be put are suggested by the illustrations. More of its possibilities are described in our booklet "Diamond-Fibre and Its Uses."

Diamond State Fibre Company

BRIDGEPORT, Pa. (near Philadelphia)
U.S.A.

Cable Address: "**DYMNFYBR**" Norristown:

Representatives for South Africa and Rhodesia.

J. V. STANTON & Co., Ltd.,
Box 3003. Phone 2211
JOHANNESBURG.

RHODESIAN TEAK & MAHOGANY

FOR MINING & BUILDING PURPOSES, ANT, ROT AND DAMP RESISTING.

Sleepers, Guide Blocks, Deals, Scantlings, Flooring (Machined for Secret Nailing) and all kinds of Purpose-Made Joinery, Fencing Posts, Etc.

PRICES MODERATE.

RHODESIA NATIVE TIMBER CONCESSIONS,

35, PERMANENT BUILDINGS, HARRISON STREET, JOHANNESBURG.

Box 5530—Phone 3568—Yard: Eloff St. Extension

CARBIDE

ALL SIZES
IN 1, 5, 10, 50 lb. TINS
and 100 lb. DRUMS

Apply: MANAGER,
RAND CARBIDE, LTD.,
SOUTH GERMISTON.
'Phone 252 Germiston.

THE BALDWIN LOCOMOTIVE WORKS

(OF PHILADELPHIA, PENNSYLVANIA, U.S.A.)

BUILDERS OF LOCOMOTIVES SINCE 1831.

ANNUAL CAPACITY .. 3,500 LOCOMOTIVES.

Locomotives, Steam, Electric, Petrol (or other spirit) Fireless.
Locomotive Parts.
Railway and Ore Trucks of all types and sizes.
Cane and Industrial Cars and Tramway Equipment.

Wheels. Axles. Tyres.
Ladd Water Tube Boilers (to burn coal or bagasse).
Wilson Plastic-Arc Electric Welders.
Elwell-Parker Storage Battery Trucks.
Fitler Rope for Drilling and General Purposes.

WORKS AT

PHILADELPHIA AND EDDYSTONE, PENNSYLVANIA.

INDIVIDUAL SERVICE - WORLD WIDE

Loveday House, (Loveday and Marshall Streets), JOHANNESBURG

P.O. Box 7017. Cable and Telegraphic Address: "BALDLOCO." Telephone 1816.

Manufacturers of all Classes of STEEL WIRE ROPES, including Flattened Strand and Lock Coil.

EXCELSIOR

WIRE ROPE COMPANY, Ltd., CARDIFF.

Sole Agents:

FLINT & EPTON,

HOWARD BUILDINGS,
JOHANNESBURG.

SUCCESSFUL

FINANCIAL PUBLICITY!

CONSULT

THE TECHNICAL PUBLICITY AGENCY.

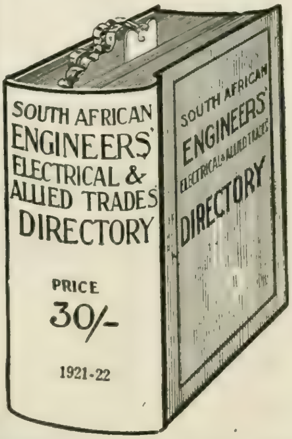
Advertising Advisers, Contractors and Consultants. Specialised, Concentrated, Wasteless, Advertising Service.

Complete Advertising Campaigns Planned and Handled. "Copy" Prepared. Best Media Chosen. Lowest Prices and Best Positions Secured.

Company Flotations a Speciality.

Phone 913. Box 3723.

177, STOCK EXCHANGE, JOHANNESBURG.


SOUTH AFRICAN ENGINEERS' ELECTRICAL & ALLIED TRADES DIRECTORY
PRICE
30/-
1921-22
SOUTH AFRICAN ENGINEERS' ELECTRICAL & ALLIED TRADES DIRECTORY

S. A. E. DIRECTORY.

1921-22 EDITION.

Including a Complete Mining Directory of — South Africa —

PUBLIC SUPPLY UNDERTAKINGS
RAILWAYS
TRAMWAYS
SUGAR MILLS
&c. &c.

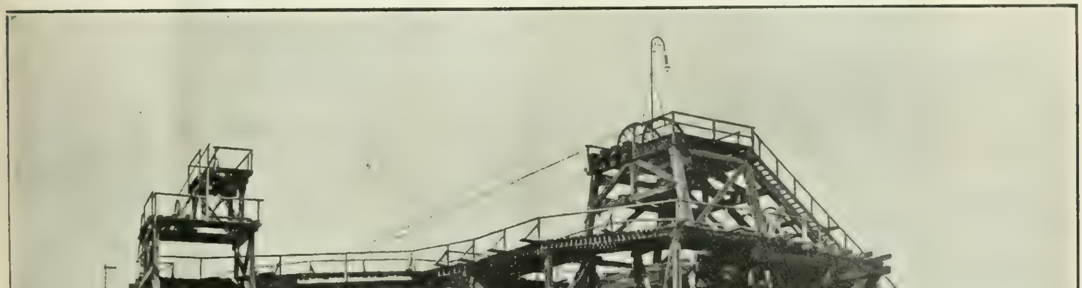
Published by
S.A. Mining & Engineering Journal
Stock Exchange Building
Johannesburg

Gold Mining a Gamble—The Mining Industry Board—
Heidelberg Reefs Controversy Revived.

The South African
Mining & Engineering Journal
THE ONLY WEEKLY MINING PAPER IN THE CONTINENT OF AFRICA.
Established 1891.

Vol. XXXIII., Part I. JOHANNESBURG, TRANSVAAL, SATURDAY, MAY 13, 1922. No. 1598.

Now in Liquidation: The Bantjes Consolidated.



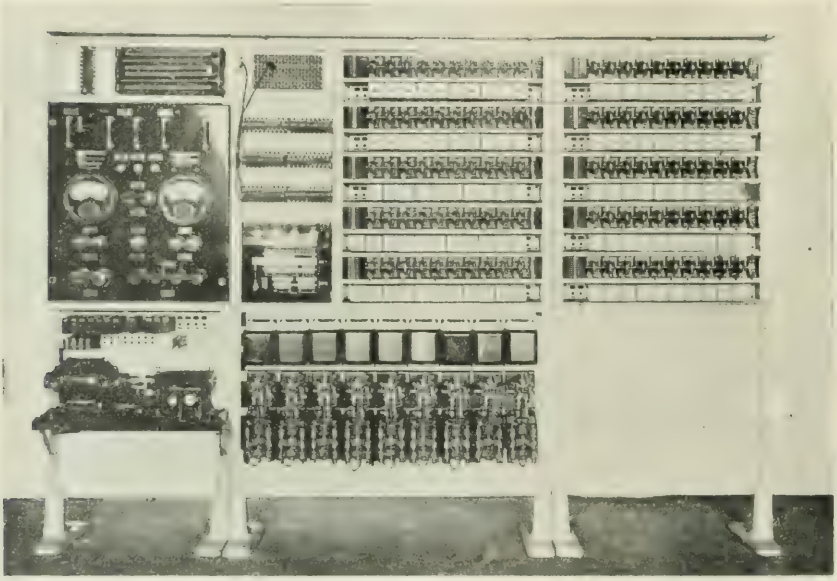
As was forecasted some months ago this Company, which dates from the early days of the Rand, has been placed in liquidation, the latest values obtained by drives of over 2,000 feet from the Company's eastern boundary proving unpayable and leaving no other alternative to closing down permanently. The history of the Bantjes further proves that Gold Mining is largely a gamble, even on the Rand, which is by far and away the most consistent auriferous field as yet discovered. An important article on this subject appears in this issue, which also contains a full account of the proceedings at the final meeting of the Bantjes Company.

SIEMENS BROTHERS

AUTOMATIC TELEPHONES

In addition to a number of
PUBLIC EXCHANGES FOR LARGE TOWNS
we have supplied scores of
PRIVATE AUTOMATIC EXCHANGES

Our EXPERIENCE is wide—Our SATISFIED CUSTOMERS numerous



PRIVATE AUTOMATIC EXCHANGE BOARD 100 Working Lines

CHEAP TO MAINTAIN—SIMPLE TO WORK

IMMEDIATE DELIVERY FROM LOCAL STOCK

Representatives in South Africa:

A. J. G. SIMPSON, A.M.I.E.E.
African Life Buildings, 85, St. George's St.,
CAPE TOWN.
P.O. Box 239, Cape Town. Telephone 1202 Central.

G. H. B. BERNARD, A.M.I.E.E.
9-10, Cotts Buildings, Rissik and Fox Sts.,
JOHANNESBURG.
P. O. Box 7404, Johannesburg. Telephone 408 Central.

Telegrams : "SIEMENS."

The Gamble of Gold Mining.

LESSONS FROM THE RAND AND OTHER MINING FIELDS OF THE WORLD.

Abundant evidence has recently been forthcoming to the truth of the fact that all gold mining is a gamble. In the testimony of several witnesses before the Mining Industry Board, and in the case of mines like the Bantjes, indeed, in the history of gold mining everywhere, ample support is available regarding the speculative character of gold mining. Some outstanding examples are quoted below.

That gold mining partakes largely of the nature of a gamble has always been regarded as a truism by mining men, but the layman needs constantly to be reminded of it. The case of the Bantjes, as revealed at the meeting of that unfortunate company last week, furnishes the latest illustration of the uncertainty of gold mining even in such a comparatively consistent field as the Rand. At that meeting, the chairman, Mr. Frank Raleigh, showed that the company had expended in its 27 years of existence: On capital expenditure, £959,009; on working costs, £2,520,522; on taxes, £20,289; total expenditure, £3,499,820. The bulk of this had gone in wages, stores, etc., to the general community. He stated: "In these days it is just as well to bear in mind that the investment of capital is not always remunerative, especially in mining, and that if some ventures pay well, others do not. The incentive to the investment of capital in mining is the chance of large profits. Take away that incentive, and it will be a poor outlook for that portion of the general community in South Africa which lives on the mining industry. It should be readily conceded that capital invested in mining ventures is entitled to a much higher rate of remuneration than ordinary investments, consequent on the great risk taken."

Gold mining in North America. A mining camp which is now closed down. We should never forget that Johannesburg is nothing more than a glorified mining camp.

Mr. E. M. Hyman, a shareholder, made the following pertinent comment on these facts: "It is one of the gambles of mining," he said. "We take the good with the bad. It only went to show the position and the gamble there was in mining. He thought it was up to some of those connected with the big houses here to bring this aspect of things to the notice of the Mining Commission—not only to speak from the Government's or the workmen's point of view; let them have also something from the shareholders' point of view."

Lessons from Other Fields.

The history of gold mining elsewhere is full of examples of similar misfortunes attendant not only upon individual mines but upon whole districts. Thus from the Imperial Mineral Resources Bureau work on "Gold" issued the other day we learn that: The dwindling of the Australian gold output is due to the gradual exhaustion of ore reserves on important fields, especially those of Western Australia; the suspension or curtailment of work at the larger copper mines; the exhaustion of alluvial areas and inactivity of deep-lead mines; failure to discover during the last 20 years any new deposits of first-rate importance; and greatly increased production costs (higher wages and prices of essential supplies), which have rendered a large number of mines unprofitable and in many instances prohibited adequate development. Other causes contributing to the decrease have been stoppages caused by industrial disputes and shortage of labour, especially during the War. With the exception of certain districts in Victoria and Western Australia, little systematic prospecting appears to have been done during the period under review, and few new gold mines are being developed. Producing companies have benefited by being able to sell their gold in the open market, the enhanced price thus obtained enabling many mines that would otherwise have been compelled to close down to continue operations. For many years Victoria, the smallest of the Australian States, was the largest producer of gold in the Commonwealth; but by 1898, as the result of sensational discoveries of gold at Coolgardie in 1892, and subsequent more or less important discoveries in other parts of Western Australia, Victoria had dropped to the second place among the gold-producing States. Deep-lead mining is practically at a standstill in Victoria, the large amount of capital required for exploration and development not being available; while the results of quartz mining in the State over a long period have been so poor as to offer little inducement to undertake further expenditure on the testing and development of lodes. In New South Wales the gold-dredging industry is every year becoming of smaller importance and the total yield of gold has dwindled almost to insignificance. In Queensland, the Charters Towers, Gympie, Croydon, Ravenswood, and other well-known old goldfields have ceased to be of any considerable importance, although for some years to come tributors may make a living in these localities. Most of the gold produced in this State for many years past has been obtained from copper mines, including the Mount Morgan, Mount Elliott and Hampden-Cloncurry. Of the total gold production in Queensland for the year 1920, namely, 115,230 fine oz., Mount Morgan contributed 90,716 fine oz. Owing to high costs of production, the Mount Morgan mine closed down at the end of March, 1921, the

Coolgardie in the early days. Coolgardie became a large town and has now dwindled to the insignificance of a village because of the closing down of the mines in its immediate vicinity.

Chillagoe State smelters ceasing operations shortly afterwards, and copper mining is now practically at a standstill in Queensland. The production of gold in Tasmania has declined more or less steadily since 1890, and during the period under review decreased almost to insignificance. Only a few gold mines are being profitably worked in Western Australia, and these have survived in most instances mainly by reason of the additional revenue derived from the increased sale price of gold premium. Mining in the East Coolgardie goldfield, the principal centre, declined rapidly during the period under review, the quantity of gold exported and received by the Perth (W.A.) Mint falling from 192,072 fine oz. in 1915 to 106,559 fine oz. in 1919. The ore reserves of the principal mines now being worked are approaching exhaustion; and, having regard to the high cost of labour and essential supplies, a progressive decrease in the gold production of the State appears inevitable. Briefly, quartz mining is on the decline throughout the Commonwealth, Victoria being apparently the only State likely to show even a slightly improved yield in the near future; the production of gold from blister copper refining (145,124 fine oz. in 1919 and 127,284 fine oz. in 1920) has now practically ceased with the closing down of so many important copper-gold mines; and the recovery of gold from placer deposits is no longer of considerable importance.

The New Zealand Fields.

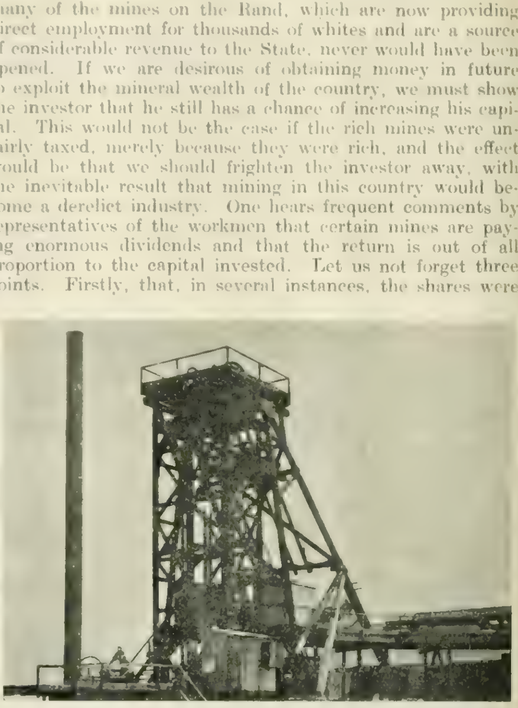
In the case of the Hauraki gold field in New Zealand the results have been almost uniformly disappointing. Outside of the Waihi centre itself, the Golden Cross claim, worked by the Waitekauri Gold Mining Company, Ltd. (an English concern), alone proved profitable. From 1895 to 1900 the Waitekauri mining camp produced bullion to the value of £309,769, of which £84,035 was distributed as dividends, almost the whole of this output being obtained from the Golden Cross claim, where the vein worked varied in width from about 5 to 25 feet. The output of that mine, however, fell abruptly from a maximum value of over £80,000 in the year ended 31st March, 1900, to almost nil by the end of 1902. The Company abandoned this mine in 1904, having previously sold the partly developed Te-ao-marama Claim to the Komata Reefs Company (another English concern), the owners of an adjoining claim. The Komata Reefs mine paid dividends amounting in all to £33,333 (10d. per 5s. share, on a capital of 800,000 shares). For the year 1911, in which only the better-class ore was mined, 7,852 tons were milled for a yield of bullion valued at £17,387, the profit amounting to only £817.

History of Alaska Gold Mines.

The flooding of the Alaska-Treadwell group of mines in 1917 to some extent accounts for the decline of the Alaskan production of gold in recent years, and it has been suggested that another important factor is the exhaustion of deposits. It has been pointed out, however, that in place of the Treadwell there are two other low-grade properties in the Juneau gold belt, the Alaska-Gastineau and the Alaska-Juneau, which have been yielding gold steadily although not profitably, also the Chichagoff, a remarkable mine of high-grade ore situated near Sitka; and it is contended that the most direct causes of the decline have been increased wages and cost of supplies, and the shortage of labour, which has been attracted to less remote mining regions where still higher wages are obtainable or cost of living is considerably less. In pre-war years the average cost of mine-operation in Alaska was 25s. per man-day, including wages, materials, supplies and overhead expenses, while the average in 1920 was nearly 46s. The high cost of operation has not only lessened the actual amount of mining, but has also discouraged prospecting for new ground and the development of finds already made.

The Moral of it all.

The lesson of all this is fairly obvious. It was well put by Mr. Erroll Hay in his evidence before the Mining Industry Board last week in the following passage: "Mining at best is a risky undertaking, and it is only through there being a few prizes occasionally that the investor is tempted to put his money into the industry at all. If he were satisfied with 5 per cent. or 6 per cent. on his outlay, he could get that return in Government Bonds, and it follows, therefore, that there must be a gambling chance that the mine will turn out well, and that he will thereby substantially increase his capital, before he will put his money into a mining venture. The gambling chance exists in the fact that this, occasionally, has proved to be the case, otherwise, many of the mines on the Rand, which are now providing direct employment for thousands of whites and are a source of considerable revenue to the State, never would have been opened. If we are desirous of obtaining money in future to exploit the mineral wealth of the country, we must show the investor that he still has a chance of increasing his capital. This would not be the case if the rich mines were unfairly taxed, merely because they were rich, and the effect would be that we should frighten the investor away, with the inevitable result that mining in this country would become a derelict industry. One hears frequent comments by representatives of the workmen that certain mines are paying enormous dividends and that the return is out of all proportion to the capital invested. Let us not forget three points. Firstly, that, in several instances, the shares were issued at a high premium; secondly, the likelihood is that the present-day holder of the shares paid considerably more than par value for them, and, thirdly, that the fact of our working a very large number of low grade mines to-day, from which the shareholders derive no benefit whatever, is directly due to the good results which have been obtained from certain of the high grade mines. To attempt to get money for opening up a mine, when no other mines in the district had been successful, would be futile. It follows, therefore, that while the low grade mines are a most valuable asset to the country, and should be kept going if at all possible, nothing should be done to interfere with the prosperity of the mines, which, to-day, are high grade, but which, to-morrow, if restrictive legislation and undue taxation are indulged in, may rapidly be transferred to the former category. It is only by the avoidance of such a policy that the industry will be able to avert the calamity which threatens it at present, and that the country will maintain its existing white population, quite apart from the increase in that direction which we all desire."



On the Central Rand where several mines are in the last decade of their existence.

POSITION WANTED.

BY MINING ENGINEER.

University Graduate. Experienced in the prospecting, development and mining of precious and base metal ores. Can do own surveying and assaying. Experienced in costs and book-keeping of mining accounts. References and degree have been examined by the Editor.

Apply "Engineer" C/o S.A. Mining & Engineering Journal.
P.O. Box 963. ———————— **Johannesburg.**

OUTSIDE DISTRICTS

Heidelberg Reefs Controversy Revived.

THE TWO LINES OF REEF AND THEIR SPONSORS—THE MOLENGRAAFF SUGGESTION—MR. MOFFAT DISAPPROVES—LOCAL OPINION ON THE MOLYNEUX LINE—QUESTION OF "INIQUITOUSLY" HIGH OPTION MONEY—THE TOWN COUNCIL AND ANOTHER CABLE.

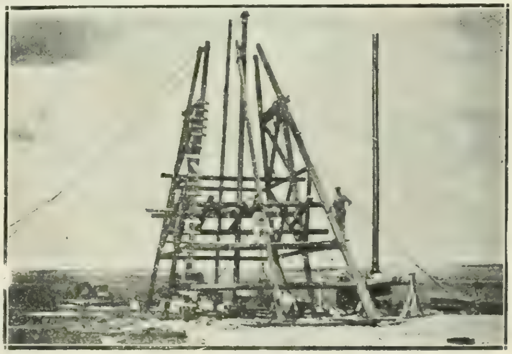
The much-disputed controversy over the identity of the reefs in the Heidelberg area is being revived, and in view of the facts that there are large numbers of unemployed and that there is urgent need in this country of new mines, the revival of such a controversy, if it will only lead to something tangible, should be welcomed by everybody. It is a pity that so much bitterness of feeling has been exhibited in this geological dispute. After all is said and done, all that is aimed at is the establishment of new mining propositions on the eastern flank of the Rand proper, and anyone who attempts to demonstrate the existence of such propositions along legitimate lines of business should be commended and not condemned.

Should Dr. Molengraaff Investigate?

The Mining Journal has on two or three occasions recently suggested that Dr. Molengraaff, the distinguished geologist, formerly State Geologist to the South African Republic, who is at present visiting the Transvaal with a scientific expedition, should be commissioned by the Union Government to investigate the controversial area and report fully thereon. We now reiterate this proposal, because we feel that good might result from it, and if it be true that there is a vast and profitable annexe to the area of our goldfield at present under exploitation we contend that no possible chance of securing authoritative and unbiassed opinion which will help towards obtaining the capital required for opening up such a field should be missed.

Mr. Moffat Returns to his Subject.

Our contemporary, the *Heidelberg News*, has recently devoted several columns to a reconsideration of the Heidelberg puzzle. A week or two ago Mr. John Moffat, who has consistently backed the Platkop line as opposed to the Houtpoort line, wrote at length to the *Heidelberg News* urging that an effort should be made to obtain capital for the proving of the gold reefs in the Heidelberg district. In the course of this letter he wrote: It has been suggested in your paper and in the Mining Journal that the Government should engage the services of Dr. Molengraaff and others to determine the geological horizons of the different reefs in the district, but why should the public be put to such useless expense? There is every reason to believe that Dr. Molengraaff would confirm the opinions of what is known as the orthodox school. As the Government have already spent a considerable amount on the geological survey of the district,' it is not to be expected that they will be foolish enough to waste money on gratifying the wish of those who put forward such an absurd suggestion. Now as it is very desirable that confidence should be restored and the district given a fair chance, it would be advisable for the special committee mentioned in your issue of the 24th inst. to devote their energies in an entirely different way to that which is contemplated. No committee however influential in Heidelberg will dragoon the Mines Department into altering its opinion regarding the reef formations of the district. It is admitted now by all competent authorities in mining matters that the extension of the Main Reef Series is to be found in the Heidelberg district, and it is only a question of time, when the values of the reefs are sufficiently proved, to justify capital on a large scale being provided for the development of the Heidelberg Goldfields.



The Southern Van Ryn erecting a Headgear a year or two ago.

"Iniquitous" Demands.

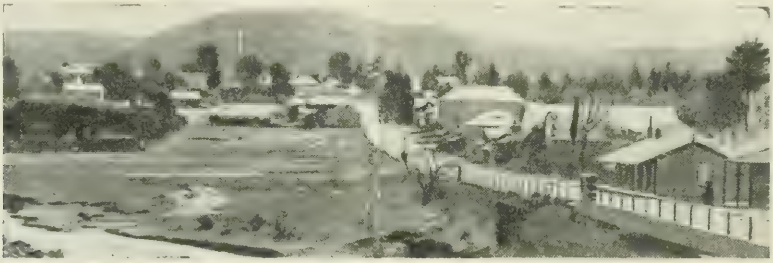
One of the greatest drawbacks to the advancement of the district from a mining point of view is the iniquitous amounts demanded for option moneys and purchase prices of minerals by the owners of the farms on the recognised horizon of the Main Reef Series. It might be well at this stage to impress upon the owners that according to Article 1 of the Gold Law, 1909, "the right of mining for and disposing of all precious metals is vested in the Crown" (State). Under those circumstances the committee ought to suggest to the Government that all farms situated on the so-called Main Reef Belt should be immediately proclaimed and that the ground outside the mynpacht allowed, which is one tenth of the extent of the farm, should be thrown open for pegging or leased by the Government as mining areas as is done on the Far East Rand. There is every reason to believe that satisfactory tenders would be forthcoming on account of these Main Reef farms being outcrop propositions. As a further aid to employing these miners who are out of work owing to the recent crisis, the Government, who apparently are anxious to provide employment for those unfortunates, should be approached on this matter. It should be forcibly impressed upon the Minister of Mines that much more labour would be absorbed in the near future, by leasing outcrop areas in the Heidelberg district than by waiting for an opportunity to call for tenders for the deep levels on the Far East Rand which will require millions of pounds to exploit before the Government gets any return, whereas in the matter of Heidelberg district the cost of exploitation would be comparatively small and not only the district but the country at large would materially benefit. This is an important point and worthy of the earnest attention of the Heidelberg District Goldfields Vigilance Committee."

The "News" on the Molyneux Line.

The *Heidelberg News* took up the cudgels with Mr. Moffat, and in an editorial remarked: "A letter appears in our columns to-day, written by one who is very well known in Heidelberg, and who still fondly cherishes the hope that something good may be found somewhere along the line of reef which passes over Botha's Kraal and Houtpoort to Platkoppies and beyond, commonly known as the Molyneux Reef—a reef upon which very large sums of money have been spent with results invariably disappointing. The magnificent plant of the Molyneux Mines was erected in the hope of finding it payable, but after a disastrous closing down of that company the plant was removed, yet not before several attempts had been made by others to make the mine pay. The Molyneux West spent big sums on the sinking of shafts on the same reef a bit further west, on Houtpoort, and a considerable mining camp was established there, but, after severely disappointing results, that camp folded its tents like the Arabs and silently stole away. Still further westward on Platkoppies a shaft was sunk and some remarkable assays were obtained, but the general result was such that the farm has since been sold as a sheep run. Much prospecting has been done along the Molyneux Reef and small patches of rich ore have been located but never extensive enough to constitute a payable mine."

The Hatch and Denny Pronouncement.

The *Heidelberg News* returns to this subject in its latest issue and attacks the local Town Council for merely having "noted" a communication to which the *News* attaches great importance. It says:—The Town Council received a cablegram from London early in last month as follows: "Dr. Hatch and H. S. Denny, eminent geologists, have both reported to Houtpoort Ltd. that the Van Ryn Reef formation underlies Tulipvale, Klipportje, Townlands and Boschfontein. This company is endeavouring to obtain capital to develop the Heidelberg area. It is important to receive Government confirmation of the statements of these recognised authorities. Trust you will assist to obtain this confirmation in the interests of Heidelberg district. This cablegram was "noted." Now a letter has been received from "Houtpoort Ltd." in London confirming the cablegram and asking the Town Council to bring the fact of the report by these two geological authorities to the notice of the Government and endeavour to obtain some official acknowledgment of the presence of the Van Ryn Reef in this area, which would greatly assist in the raising of capital for the purpose of exploiting the auriferous deposit. This is an urgent matter, hence the cablegram, but the money spent on the said cable might as well have been pitched on a dung-heap for all the use it has been. The letter confirming the cable, now to hand, is to come before the next meeting of the Town Council, and we hope it will be a good deal more than "noted." The very important business of reducing the salaries of the Municipal staff has now been completed, so the full energies of the Council should now be free to tackle this matter, which we cannot help regarding as of even greater importance. The country is swarming with unemployed, to whom every month of postponement is of importance in connection with the development of industries which will alleviate their condition. Our district is being neglected while large capital is waiting for suitable investment. Those who are devoting themselves to the task of opening up our payable reefs are asking for our co-operation. And what are we doing? Snoozing. Laying important communications by in portfolios. Does the Heidelberg District Goldfields Vigilance Committee know of this cable and this letter? And if so, do they propose no action in connection with them? When is our public meeting to be held? It is long overdue. The Rand Revolution had the effect of postponing it, we know, but is that postponement going to last indefinitely?" It may be said that a quarter of a century of disappointment has made us incapable of enthusiasm over such matters as this and perhaps that saying would just about sum up the situation.



Heidelberg: Capital of the Further Far East Rand.

A Suggestion to the Government.

Into the various stratigraphical and lithological perplexities of the Heidelberg Reef problem we do not propose to go here. We have examined the controversy on several previous occasions, and not so very long ago a special Commission of this journal visited the district and reported on the various reefs and properties existing there in detail. The point is that with strong presumptive evidence of the existence of ore bodies containing gold in this area, it should be worth while now that there are so many miners out of work to make a fresh start in the district. The Government could give the movement a start by the remission of claim licences and fines where genuine work is being done and by the employment of a certain number of men on the opening up of outcrop propositions as relief work. If farm owners simultaneously could be induced to be more reasonable in their demands for option moneys, Heidelberg may yet produce some new and workable mines. The country could well do with them. Meanwhile the Southern Van Ryn people are doing their best to obtain sufficient capital to revive that proposition of chequered history, and we wish them all success in their efforts to raise money through the media of the prospects of their own mine and the results of the Auckland Park and Durban Handicaps.

Enemy Shareholdings.

PROGRESS OF CAPETOWN NEGOTIATIONS—THE UNION CORPORATION CONCLUDES ANOTHER DEAL—TERMS ON WHICH MODDER DEEPS & GEDULDS ARE OFFERED—CUSTODIAN & OTHER GROUPS BARGAINING—THE NEW MODDER PARCEL.

Negotiations for the purchase of the shareholdings of former enemy subjects vested in the Union Custodian seem at last to have made some progress. As is generally known, the question of the disposal of these interests has been hanging over the market for months past, and delicate and difficult negotiations between the British Public Trustee and the Union Custodian have necessitated the presence of the South African Government's representative in Europe.

Protracted Negotiations.

Time after time it has been rumoured that all difficulties have been surmounted and that the sale of these shareholdings was being concluded; and time after time, too, these statements have proved to be at least premature. But progress in the settlement of this troublesome problem at length appears to have been made, and in this instance, as on a previous occasion, the Union Corporation has not been slow in acquiring the enemy shareholdings in its subsidiary companies.

Modder Deep and Geduld.

The progress of the dealings has been invested with much secrecy, but it is known that representatives of the Central Mining/Rand Mines Group, the Johannesburg Consolidated Investment Company, the General Mining and Finance Corporation, and the Consolidated Mines Selection Group have recently been deliberating the matter at Capetown with the Custodian of Enemy Property.

The first result of these important pourparlers was the issue on Tuesday by the Union Corporation, Ltd., of special circulars to the shareholders of the Modderfontein Deep Levels, Ltd., and the Geduld Proprietary Mines, Ltd. These circulars appear in another portion of this issue, but it may here be pointed out that in the case of the Modder Deep the circular states that as a result of negotiations with the Custodian regarding the disposal of the remaining shares in the company controlled by him or the Public Trustee, United Kingdom, an agreement has been entered into with the Custodian whereby the company has undertaken to purchase these shares—aggregating approximately 50,017—at the price of £2 per share. "These shares," it is added, "are now offered at the purchase price to shareholders under the guarantee of the Union Corporation, Ltd., who will receive as consideration a cash commission of 5 per cent. on the total purchase price." Shareholders registered at the close of business on Tuesday, May 23, are offered shares, the subject of the above purchase, in the proportion of one share for every complete 40 shares held, at the price of £2 per share, payable in full on application, the company reserving the right to reduce the number of shares to be allocated in the unlikely event of the actual number of shares to be acquired from the Custodian proving insufficient.

The wording of the circular sent to shareholders of the Geduld Proprietary is similar, except that here the company has agreed to buy approximately 72,861 shares at £2 10s. each. The corporation's commission will be the same—5 per cent.

Shares Involved: An Interesting Schedule.

It is understood that shares held by the Custodian in the Union or the Public Trustee in England in other companies have been offered to the groups at figures which have been resolved upon either provisionally or definitely by the Custodian, advised by experts and the Government Mining Engineer. Presumably, when the transactions are completed the prices will, as in the cases mentioned above, rule somewhat below those at which the shares figure on the market to-day, and will be offered to shareholders on similar terms.

The following schedule exhibits the principal blocks of shares held in South Africa by the Union Custodian:—

Company.	No. of Shares.
New Modder	437,861
Modder B	150,896
Brakpan Mines	49,486
Springs Mines	53,588
Johannesburg Consolidated Investment	58,111
Meyer and Charlton	29,865
General Mining	482,733
West Rand Consolidated	692,947
City Deep	21,832
East Rand Proprietary	53,562
Consolidated Main Reef	22,495
Village Deep	34,117
Modder East	21,482
Knight Central	21,755
Van Dyk	185,369
Van Ryn Estate	22,497
Wolhuter	53,676
Wit. Deep	32,575
Bantjes	59,844
Cinderella Consolidated	58,952
Glynn's Lydenburg	19,342
New Kleinfontein	45,727
Nourse Mines	16,326
Rose Deep	11,584
Robinson	51,100
Rand Collieries	110,240
Randfontein Estate	32,402
Randfontein Central	31,356

From this schedule it will be seen that by far and away the most important parcel to be negotiated for is the New Modderfontein holding. At a price of 76s. per share the value of the enemy holding represented by the Custodian of Enemy Property in the Union is about £1,664,000. Some time ago previously to the splitting up of the shares repeated efforts were made by the New Modder board to come to terms with the Custodian, but without result.

The Modder Deep and Geduld Arrangements.

The Union Corporation people, however, arranged acquisition of the Modder Deep and Geduld holdings, and made distributions to shareholders *pro rata* to their existing holdings. It may be recalled that in April, 1919, the Geduld Company purchased from the Custodian of Enemy Property for the Union of South Africa, at £2 per share, approximately 250,000 shares, and in June, 1919, shareholders were invited to subscribe for these (less 85,185 which were retained by the company for dividend purposes) at the same price in the proportion of two for every eleven shares held, the issue being guaranteed by the Union Corporation, Ltd., for a cash commission of 5 per cent.

As to the Modder Deep Levels, in May, 1919, the company purchased from the Custodian of Enemy Property in South Africa 70,000 shares vested in the Custodian at £6 12s. 6d. each (this was before the shares were split), and the following month 46,190 were offered to shareholders at the same price, the issue being guaranteed by the Union Corporation, Ltd., for a commission of 5 per cent. The balance, viz., 23,810, was distributed as part of next dividend. The shares were sub-divided in August, 1919. The Rand Selection Corporation also concluded a deal with the Union Custodian about the same time.

Further details of the progress of negotiations are anxiously awaited, but up to the time of going to press nothing in addition to what is published in the foregoing is definitely known.

RYLANDS' STEEL WIRE ROPES

MANUFACTURED BY:
RYLANDS BROTHERS, LTD.,
WARRINGTON, ENGLAND.

SOLE REPRESENTATIVES FOR UNION OF SOUTH AFRICA:—
ARMSTRONGS & MAIN, LTD.,
84, Marshall Street,
JOHANNESBURG.
P.O. BOX 5988. 'PHONE 5203.

LARGE STOCKS ON HAND.

SPECIALISTS ..

IN THE MANUFACTURE AND DESIGN OF
STRUCTURAL STEELWORK.

ARMSTRONGS & MAIN, LTD.,
GENERAL AND CONSTRUCTIONAL
.. ENGINEERS, ..
84, Marshall Street,
JOHANNESBURG.

P.O. BOX 5988. TELEPHONE 5203.

Finance and Information for Investors.

AN EXAMINATION OF BALANCE SHEETS AND REPORTS—DATA FOR SHAREHOLDERS.

Union Corporation.

An abridged report of the Union Corporation, Ltd., has been issued, which shows that the net profit for 1921 was £179,516, against £190,074 for the previous year. The amount brought forward from 1920 was £68,355, leaving a total of £247,872 available for distribution. After adding £30,000 to the reserve fund (against £40,000 for the previous year), and declaring a dividend of 2s. (or 16 per cent.), involving a sum of £140,000 (which is the same as the previous year), there is £77,872 to be carried forward. The 180,000 shares which were under option until December 31 last at 40s. per share to the subscribers of the 1918 issue were all taken up with the exception of 1,948, and the company has thus been supplied with a considerable amount of additional capital. The issued capital is now raised to £1,328,052. The reserve fund has now reached substantial dimensions, and the financial position of the company is a strong one.

* * *

Harmony Proprietary.

The report to December 31 last states that of the £150,000 of 8 per cent. first mortgage debentures, authorised by shareholders at last general meeting, £83,600 had been issued at December 31 last and £66,400 remained for issue. There is also outstanding a balance of £17,000 of 6 per cent. debentures, the charge in favour of which is now confined to the three farms, Dusseldorp, Munchen, and Lunenburg. The contracts entered into in July, 1920, for sale of these three farms, and farm Luxemburg, to the Officers Colonial Land Co., Ltd., have been cancelled on the advice of the general manager, and in lieu thereof farm Luxemburg has been conveyed to that company in consideration of payments received, and it is proposed to lease farm Dusseldorp to them on easy terms with an option of purchase, minerals being reserved in each case. The Company has thus recovered possession of farms Munchen and Lunenburg, which seem likely to prove two of the most valuable farms on the estate. The issue of 8 per cent. debentures in exchange for old debentures and in discharge of heavy indebtedness shown on last balance sheet, was carried through in November last. The remainder of the 8 per cent. first mortgage debentures was offered to shareholders at 90, in accordance with promise made at last general meeting. The estate, even in its present undeveloped condition, offers ample security for the par value of the debentures, but, as considerable outlay must be incurred before a revenue-earning stage can be reached, it will be necessary to pay the interest upon them out of corpus for the first year or two. On the other hand, by the expenditure of comparatively small sums of money, the price at which land can be sold will be increased enormously. Before a programme of development, which includes planting up of small areas in cotton, tobacco, ground-nuts, mealies, and other crops not needing irrigation can be entered upon, the directors must see their way to at least £12,000 of working capital, and they have decided to offer to shareholders a portion of the 8 per cent. first mortgage debentures remaining unissued at the special price of £75 per £100 debenture.

* * *

Bwana M'Kubwa Copper.

The liquidator of the Bwana M'Kubwa Copper Mining Company says in a circular:

The Bwana M'Kubwa Copper Mining Company (new company) was incorporated on February 3, 1922, with a capital of £400,000 divided into 1,600,000 shares of 5s. each. I now offer to shareholders 925,053 shares of 5s. each credited with 2s. 6d. per share paid up, being at the rate of one share in the new company for each fully-paid share of 10s. each held in the old company, the liability of 2s. 6d. per share to be paid in five instalments , viz., 6d. on allotment and 6d. every four months thereafter. The subscribers will be entitled to a call at par for two years from the date of incorporation on one share for every six shares taken up and paid for, and a call at par for four years on one share for every six shares taken up and paid for. The mine as developed to-day shows a large body of oxide and mixed oxide-sulphide copper ores on the upper levels. A new process for treatment, combined with low cost open cut mining methods, should lead to profitable operations at an early date. It is intended to proceed as rapidly as sound engineering will permit to elaborate plans for the working of the oxidised portion of the mine and the construction of a plant to treat these ores by the new process probably on a basis of not less than 1,000 tons per day. Simultaneously with the above it is intended to proceed developing the mine below the 450-feet level in order to prove the sulphide ore in the zone known to exist. Summing up the situation it is thought that with the arrangements in hand shareholders may be assured of profitable operations, even with copper at present prices. Minerals Separation, Ltd., have been appointed consulting metallurgists to the new company.

* * *

Consolidated Diamond Mines of South-West Africa.

The Report for 1921 states extreme depression has been the keynote of diamond market during period under review. Sales of diamonds fell to practically nothing in third quarter of year, only £374 worth of stones being replaced to the London Diamond Syndicate in that period. The passing of the dividend which could have been paid at end of 1920 placed the company in a comparatively strong financial position at that date. As depression in diamond market continued, and with heavier effect, and bearing in mind the company's heavy commitment for debenture interest, the directors reviewed their policy of production, and decided to discontinue operations at mine altogether as from July 1, 1921, it being essential, in their opinion, to conserve company's cash resources to utmost degree possible. This policy was embraced very reluctantly, since it involved discharge of many employes who had been in service of the company, and its predecessors, for a considerable period. Bonuses amounting to £11,017 were paid to discharged employes, and every effort made to find other employment for as many as possible of them. A skeleton staff has been retained to facilitate work which reopening fields will entail, and to effect necessary alterations to plant for obtaining greater efficiency therefrom.

The Directors have concluded an agreement with the Anglo-American Corporation of South Africa, Ltd., whereby the corporation will, if required, advance sufficient money which, together with this company's own cash resources, will enable it to meet its obligations for debenture interest to June 30, 1923, and running expenses to end of that year. Attention is directed to sum of £106,153 appearing on assets side of balance sheet. This represents amount which the company claims has been overcharged by South-West Africa Administration in assessing diamond tax for year 1920. The Diamond Taxation Ordinance of South-West Africa allows for deduction of charges based on value of assets appearing in balance sheet, which, shareholders will recollect, was arrived at by an independent engineer of repute. The South-West Africa Administration has calculated these charges on a different basis, and the directors are now taking steps to bring the assessment under review. The unification of existing royalties, which is so essential to economical working of the company's property, has been under discussion during year, and at a meeting between representatives of the Government and the company, under chairmanship of Sir Robert Kotze, a scale of unified royalties was arrived at and agreed to by all representatives. This scale is now awaiting confirmation of the Union Treasury.

Geldenhuis Deep Year.

"DIFFICULT AND UNCERTAIN" OUTLOOK.

The annual report of the Geldenhuis Deep, which has just been issued, shows that, compared with the operations of the preceding year, the tonnage milled increased by 15,950 tons. The yield, however, records a decrease of ·25 dwt. per ton milled which, combined with the lower price obtained for gold, equals a reduction in revenue of 2s. 10d. per ton milled. Working costs increased by 1d. per ton and the working profit consequently shows a fall of 2s. 11d. per ton milled. This working profit only amounted to £2,516 3s. 9d., equal to 1d. per ton milled, and is wholly due to the price of gold having ruled above standard during the period under review; with gold at standard price the year's operations would have resulted in a heavy loss. For the reasons given in the consulting engineer's report, the payable ore reserve re-estimated and re-valued as at 31st December, 1921, shows a decline of 552,900 tons and an increase in average value of ·6 dwt. per ton; in view of the scattered position of the working faces an improvement in yield cannot, however, be expected from this rise in value. There is a large tonnage of low grade ore developed in the mine which, under existing conditions, cannot be classed as payable. The directors state that "owing to the high operating costs and the fall in the price of gold the outlook for the company during the current year remains difficult and uncertain." The balance of working expenditure and revenue account for the year shows a net profit of £5,414 3s. 1d. This amount, together with the balance of £150,071 1s. 1d. unappropriated at the commencement of the year, £88 10s. 11d. in respect of forfeited dividends, and £6,118 2s. 3d. being net credit on capital account, making a total of £161,691 17s. 4d. has been dealt with as follows:—Government taxes, £34 15s. 5d.; leaving a balance unappropriated at 31st December, 1921, of £161,657 1s. 11d. This balance is made up as follows:—Shares and interests in co-operative and other concerns, £15,202; stores and materials, etc., £30,178; sundry debtors and payments in advance, £27,278; Geldenhuis Estate small holdings—loan account, £943; total, £73,602; net cash and investments, after allowing for liabilities, £88,054. The balance of the appropriation account records an increase of £11,586 0s. 10d. Cash assets, viz., shares, stores, sundry debtors, etc., show a net decrease of £7,159 8s. 4d., whilst the cash position has improved by £18,745 9s. 2d.

Mr. A. J. Brett, the consulting engineer, writes:—The following tabulation summarises the salient features of tne work of the past three years:—

	1919.	1920.	1921.
Tonnage milled	560,100	557,500	573,450
Working costs per ton ...	24/0	27/10	28/0
Revenue per ton with gold at 84s. per oz.	23/7	23/6	22/5
Working profit per ton with gold at 84s. per oz.... ...	*0/5	*4/4	*5/7
Working profit with gold at 84s. per oz.	*£11,435	*£121,039	*£159,150
Additional revenue represented by difference between 84s. per oz. and actual price realised ...	£66,837	£205,930	£161,666
Total working profit	£55,402	£84,891	£2,516
Development footage	4,735	6,317	8,580
Ore in reserve—tons	1,375,200	1,467,100	914,200
Average value of ore reserve—dwt. per ton ...	5·9	6·1	6·7
Average strength of coloured labour force	3,981	4,177	4,567

* Loss.

The company has had a very difficult year, and after spending over £800,000 and producing 153,450 oz. of gold, has barely been able to make a profit. A study of the detailed results will show that losses were actually incurred in eight months out of the twelve, namely, the first five and the last three. An improvement in the native labour supply enabled a somewhat greater tonnage to be milled than was treated during the preceding year. Working costs were slightly higher which was wholly accounted for by increased cost of development, while the yield per ton declined by ¼ dwt. A considerable amount of shaft trouble was experienced during the period under review, particularly in the western section. The ore reserve at the end of the year was estimated to be as follows: Main Reef, 242,300 tons, 6·5 dwt. per ton; Main Reef Leader, 143,500 tons, 6·5 dwt. per ton; South Reef, 372,900 tons; 7·1 dwt. per ton; composite reefs, 155,500 tons, 6·5 dwt. per ton; total, 914,200 tons, 6·7 dwt. per ton. The tonnage in reserve shows a heavy decline, while the average value has increased by ·6 dwt. The decrease in tonnage is partly due to the fact that the ore developed was insufficient to replace that mined during the year, since there is only a small amount of ground still to be developed, also to the elimination of certain blocks that are not of a sufficiently high value to pay for the opening up of fallen areas necessary to get at them, but the most important factor is the cutting out of a considerable tonnage from the reserves owing to the necessity of fixing a higher pay limit consequent on the decline in the price of gold. The exclusion of this low-grade rock is responsible for the increase in value noted above, but it must be emphasised that, notwithstanding the improvement in the average value of the ore reserve, an increase in the yield cannot be looked for, since with the number and the widely scattered position of the working faces available, it is not possible to operate the mine economically at the average value of the payable reserves. In addition to the ore reserve mentioned above, further fully developed and available areas containing in all 778,000 tons at present classified as unprofitable, would fall within the margin of payability on a reasonable reduction in operating costs. Certain small areas of useful ground were opened up by development during the year, particularly on the South Reef in the western section. Negotiations for a reciprocal lease of certain mining areas referred to in last year's report were satisfactorily concluded with the Simmer and Jack Proprietary Mines, Ltd., and No. 2 shaft is now being extended into the exchanged area with a view to working out the lowest part of the eastern section. The future of the company must needs give rise to considerable anxiety. During the year under review the average cost of producing an ounce of gold was 104s. 8d., whereas the selling price is now about 10s. below this figure. Under these conditions it is clear that, in order to enable the company to carry on, a substantial reduction in operating costs must be effected, since no material improvement in the yield can be looked for.

JUST PUBLISHED.

PROVISIONAL

Geological Map of Southern Rhodesia.

On one sheet measuring 33 by 35 inches.

Scale 1 : 1000000, or about 16 miles to one inch.

Showing the geological formations in 12 colours, sites of the principal mines, railways, rivers, etc. Compiled by the Geological Survey of Southern Rhodesia, and sold at the Mining Commissioner's Offices in Bulawayo, Gatooma, Gwelo, Salisbury, Umtali and Victoria.

Price £1 (postage to the Union 1/1 extra).

New Kleinfonfein Position.

POINTS FROM ANNUAL REPORT.

From the annual report of the New Kleinfontein G.M. Co., issued this week, we learn that the working profit for 1921 was £65,025. In addition to this, the rental from the leasing of the Apex reduction plant and sales of plant amounted to £30,873. The balance carried forward from the previous year amounted to £179,814, making a total of £275,712, which was dealt with as follows:—Interest, £5,334; French fiscal taxes, £1,222; repayment to mortgagees, £4,767; dividend No. 26 of 5 per cent., £57,577; and balance unappropriated, £206,812. The working costs for the year were £1 6s. 5.5d. per ton milled, as compared with £1 8s. 5.3d. for 1920. The decrease in costs is due to the suspension of operations in the Apex section of the mine and to reductions in wages and stores. The ore reserves at 31st December, 1921, were as follows:—Tonnage, 1,325,333; stoping width, 56.65 inches; stoping value, 5.18 dwt. The actual cost of development during the year has been charged to mining costs.

Mr. E. J. Way, the consulting engineer, writes:—The principal features calling for comment are: (1) Results of development, (2) results from the reduction works, (3) working costs, and (4) general. (1) Results of Development: The annual re-estimation of the ore reserves, calculated on the same basis as that adopted in 1914, shows that there were developed in the New Kleinfontein section of the mine 1,325,333 tons of an average value of 5.18 dwt. over a stoping width of 56.65 inches. The development of the Benoni section of your mine, to which I referred in my last report, has been extended during the year. The chutes of ore have been prepared for development and the continuation of a chute previously exposed on the west side of the No. 5 shaft is now being proved. The ore already developed has added approximately 60,000 tons of a value of 6 dwt. to the reserves. (2) Results from Reduction Works: The grade of ore milled during the year was lower than that milled during 1920. This fact accounts for the slight decrease in the percentage of extraction from the Kleinfintein milling plant. (3) Working Costs: The working costs for the year totalled £768,778 2s. 4d., equal to 26s. 5.5d. per ton, a decrease of nearly 2s. per ton milled as compared with the previous equal period. This is due to slight decreases in the cost of stores and in the amounts paid for wages. This working cost is still some 8s. higher than that of the period before the War. (4) General: From the table of the value of the ore reserves previously given it will be manifest that great efforts must be made further to lower working costs if your company's mine is to continue working at a profit. The underground position in the Benoni section is very encouraging and the amount of ore from this section added to the reserves is calculated on a very conservative basis.

RELIABLE EXPORT FIRM WANTS

Thoroughly introduced Selling Agent for Steel and Iron Structural Work, Railway Rolling Stock and glass in any shape and form. Apply with references to **DEVOS & BAUGNIET, Kipdorp 21, Antwerp, BELGIUM.**

Mining Men and Matters.

The gold medal of the Institution of Mining and Metallurgy has been awarded to Mr. Edward T. McCarthy, Assoc. R.S.M., M.Inst.M.M., in recognition of his services to the mining industry and the mining engineering profession and as an expression of the high regard in which he is held by his fellow-engineers.

* * *

The Council of the Institution regret that the state of the mining industry does not yet permit the post-graduate scholarships and courses, which have been in suspense since the outbreak of the war, to be resumed. They are hopeful, however, that conditions will improve so far as to admit of their revival in the near future.

* * *

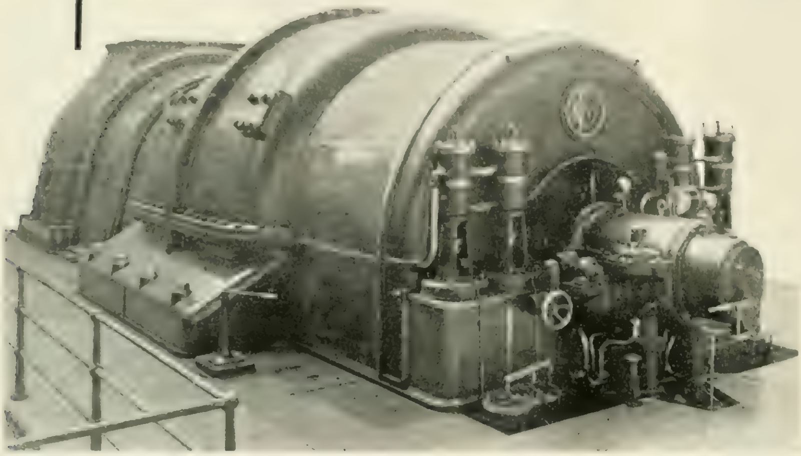
Mr. S. J. Speak, A.R.S.M., has been elected President of the Institution of Mining and Metallurgy in succession to Mr. F. W. Harbord, C.B.E., A.R.S.M. Mr. Edgar Taylor has been re-elected treasurer; and Messrs. R. Gilman Brown, Henry F. Collins, E. T. McCarthy, H. M. Morgans, J. C. Moulden, and E. R. Woakes have been elected or re-elected as vice-presidents for the year 1922-23.

* * *

After a long and valuable association with the firm of Mosenthal Bros., Ltd., in South Africa, Sir Ernest Chappell has decided to retire. His splendid work in helping to retrieve the wool impasse did not pass unnoticed by the South African Government, and the order of knighthood recently crowned a remarkable career. Sir Ernest will be succeeded in his present position by Mr. G. D. Massey, the present manager in the Transvaal. Mr. J. P. Long succeeds Mr. Massey.

* * *

The 30th annual dinner of the Institution of Mining and Metallurgy took place on Wednesday in the Edward VII. Rooms, Hotel Victoria, London, and was attended by about 200 leading members of the mining profession. It was a special pleasure to Mr. F. W. Harbord, C.B.E. (the President), and indeed all present, that the Right Hon. W. Bridgeman, M.P. (Secretary for Mines) was able to be present. The testimonial the Secretary of Mines gave to the Institution will also be noted, for he credited it with having "upheld the high standard of moral, intellectual and scientific value of the mining industry." Mr. Bridgeman, in speaking of the coal industry, believes that this is now down to the proper economic position. He declared the policy of the Mines Department to be not to interfere too much with mining, but to let it have that freedom for which Sir John Cadman contended. The Budget of the Ministry of Mines has been reduced from £700,000 two years ago to £171,000 in 1922, and this is a point to be remembered when, hereafter, the work of the Ministry comes under review. The largest part of the expenditure is devoted to the health and safety of the miners, and the motto of the Department is the "maximum of safety with the minimum of regulations." That part of the address of Mr. Harbord, the President, dealing with the internal work of the Institution, was satisfactory. The membership has increased, and is now equal to what it was before the war. The Institution has moved into its new quarters, and its fusion with the Institution of Mining Engineers has proved advantageous to both. Speaking on the general subject, the President pointed out that no class is brought more closely into touch with the different portions of the Empire than that of the mining profession. One of the most recent efforts of the Institution has been to establish the Overseas' Committee to which Mr. Bridgeman referred, and which the President said is destined to keep the Institution in touch with the principal States and Colonies, and thus "help to maintain a high standard of professional conduct."



FRASER & CHALMERS H.P. Steam Turbine continuous maximum rating 18,750 k.w. overload rating 23,500 k.w. 1,500 revolutions.

Economy—Reliability

THESE two attributes are combined in Fraser and Chalmers G.E.C. "Witton" Turbo-Alternators, which represent the accumulated result of many years of research and practical manufacturing experience.

The association of Fraser and Chalmers Engineering Works with the various factories of the General Electric Co., Ltd., England, and the combined experience and manufacturing facilities, place them in a most favourable position to undertake contracts for the complete equipment of proposed installations.

Standard Size of Production from 500 k.w. to 30,000 k.w.

The British General Electric Co. Ltd

REG'D TRADE MARK

Representing THE GENERAL ELECTRIC CO., LTD., of England

Head Office :—

Johannesburg

Corner Loyeday and Anderson Streets
Box 2406 Phone 4242 3 Tel.: "Current"

Capetown

83/89, Castle St.
Box —— 1327
Phone —— 1401 2
Tel. :—"Induction"

Durban

56, Field Street
Box —— 922
Phone —— 1793
Tel. : — "Ampere"

Agents at:—Port Elizabeth, East London, Maritzburg, Bulawayo, Delagoa Bay, Beira, Dar-es-Salam, Tanga, Zanzibar, Mombasa, Nairobi, Uganda, Etc.

April Gold Output : Group Returns.

LARGE DECLINE IN PRODUCTION—MODDERS MAKE GOOD PROFITS.

DROP OF NEARLY A MILLION.

The Transvaal gold output for the month of April was declared on Wednesday by the Chamber of Mines. For the purposes of comparison December, 1921, is the last month that can be utilised, for since then there has been no full month worked.

Thirty-eight mines on the Rand and three in the outside districts, in addition to the "miscellaneous" return in both, are responsible for 511,388 oz., valued at £2,352,155. The market price for gold has been taken at 92s. per oz., which includes realisation and other charges. The December figures were 681,847 oz., value £3,255,000, the average price being taken as 95s. 6d. per oz. It will be seen therefore the value of the output is decreased by nearly £1,000,000.

Total output, 511,388 oz., value £2,352,155. Witwatersrand, 493,402 oz., value £2,269,649. Outside districts, 17,936 oz., value £82,506.

CENTRAL MINING/RAND MINES GROUP.

The following are the results of operations at the mines of the Central Mining/Rand Mines group for the month of April:—

Company	Tons crushed.	Yield in Fine Gold Ozs.	Estimated Value.	Estimated Profit
City Deep	69,200	27,033	£121,986	£30,025
Cons. Main Reef	35,000	13,039	58,588	3,232
Crown Mines	146,400	43,666	197,041	35,662
Durban Rood. Deep	24,500	8,183	36,792	1,606
East Rand Prop.	85,000	22,997	103,776	263
Ferreira Deep	15,900	4,464	20,145	*5,950
Geldenhuis Deep	38,223	10,160	45,849	*639
Knight Central	19,100	4,773	21,412	*107
Modderfontein B.	40,000	20,700	93,990	43,603
Modderfontein East	17,500	8,136	36,058	760
New Modderfontein	61,000	28,801	129,964	63,816
Nourse Mines	34,100	11,421	51,538	3,689
Robinson	11,500	4,471	20,175	3,786
Rose Deep	38,200	9,882	44,592	4,563
Wolhuter	26,500	6,313	28,485	2,309
Village Deep	45,500	14,796	66,768	12,588
Totals and averages	707,623	238,835	£1,077,159	£199,206

* Loss

Working Costs.—City Deep, 26s. 6·9d.; Cons. Main Reef, 31s. 7·5d.; Crown Mines, 22s. 0·6d.; Durban Roodepoort Deep, 28s. 8·7d.; East Rand Proprietry, 24s. 4·3d.; Ferreira Deep, 32s. 9·9d.; Geldenhuis Deep, 24s. 3·9d.; Knight Central, 22s. 6·4d.; Modder B., 25s. 2·3d.; Modder East, 40s. 4·1d.; New Modder, 21s. 8·2d.; Nourse Mines, 28s. 0·8d.; Robinson, 28s. 6·0d.; Rose Deep, 20s. 11·5d.; Wolhuter, 19s. 9·0d.; Village Deep, 23s. 9·8d. average, 24s. 9·8d.

Ferreira Deep.—The low tonnage crushed is due to the fact that No. 1 shaft is not yet cleared of the rock which fell in December, but it is expected to be in commission about the end of May, when the tonnage output will be increased.

General Note.—The valuation of gold has been taken at 90s. 3d. net. The tonnage output was adversely affected by the disorganisation and shortage of native labour occasioned by the recent prolonged strike on all mines. In considering the working costs for the past month it must be borne in mind that these are reduced in every case by the shortage of development footage accomplished which has been appreciably below normal. Expenditure under this heading will gradually increase as additional supplies of native labour come forward.

BARNATO GROUP.

The following are the results of operations at the Barnato group of mines for the month of April:—

Mine.	Tons Crushed.	Revenue from Gold. £	Total working Costs. £
Consolidated Langlaagte	25,800	35,612	34,733
Government G.M. Areas	105,500	217,503	100,309
Langlaagte Estate	35,000	55,145	42,930
New Primrose	14,500	15,100	15,110
New Unified	8,700	8,397	8,263
Randfontein Central	88,700	118,669	108,870
Van Ryn Deep	36,500	74,913	40,429
Witwatersrand	25,280	29,544	29,748
Totals and averages	339,980	£554,883	£380,392

Mine	Working Costs per Ton Milled. Shillings.	Gross Profit including Sundry Revenue £
Consolidated Langlaagte	26·925	£1,312
Government G.M. Areas	19·016	118,048
Langlaagte Estate	24·532	12·534
New Primrose	20·842	162
New Unified	18·996	231
Randfontein Central	24·548	11,161
Van Ryn Deep	22·153	35,027
Witwatersrand	23·535	1,425
Totals and averages	22·377	£179,900

Note.—The above results are arrived at by calculating the gold at £4 12s. per fine ounce. All companies suffered from a shortage of native labour. Working costs of all companies were favourably affected by practically no development work being done during the month.

CONSOLIDATED GOLD FIELDS.

The following are particulars in regard to the outputs of the producing mines of the Consolidated Gold Fields group for the month of April:—

Company	Stamps Running.	Tube Mills Working	Tons Crushed	Gold Declared Fine ozs.	Total Profit Declared, including Sundry Revenue £
Simmer and Jack	320	7	29,700	8,472	214
Robinson Deep	115	7	39,700	13,224	7,460
Sub Nigel	30	2	10,200	5,597	6,732
Totals	465	16	79,600	27,293	£14,406

The revenue derived from gold for the month of April is calculated at the rate of £4 12s. per fine ounce, less estimated gold realisation and exchange charges of 1s. 6d., or a net figure of £4 10s. 6d. per fine ounce. Simmer and Jack and Robinson Deep especially suffered from shortage of native labour.

Gold in Reserve.—Simmer and Jack, 1,200 ozs.; Robinson Deep, 1,495 ozs.; Sub Nigel, 2,108 ozs.; total, 4,803 ozs.

TRANSVAAL SILVER AND BASE METALS.

The output of the Transvaal Silver and Base Metals Company for the month of April totalled 361·6 long tons of lead bullion, containing 35,824 ozs. of fine silver, representing a total value, at to-day's prices of the metals, of approximately £14,000.

CONSOLIDATED MINES SELECTION GROUP.

The following are the results of operations for the quarter ended March 31:—

	[illegible]	[illegible]	[illegible]		[illegible]	[illegible]	
			s.	d.	£	s.	d.
Brakpan	120	32,000	32	3·7	£59,998	37	5·9
Springs	80	30,900	30	9·8	57,634	37	3·6
Totals & Averages	200	62,900	31	6·9	£117,632	37	4·8

	Working Profit based on standard value of Gold			[illegible]	[illegible]
	Total	per ton			
	£	s.	d.	£	£
Brakpan	£8,306	5	2·2	£4,420	£12,726
Springs	10,028	6	5·9	3,932	13,960
Totals and averages	£18,334	5	10·0	£8,352	£26,686

GENERAL MINING AND FINANCE CORPORATION.

The following are the results of operations at the mines of the General Mining and Finance group of companies for the month of April:—

Company	Tons Crushed	Total cost	Cost per ton
		£	s.
Aurora West	7,160	9,127	25·49
Meyer and Charlton	11,000	14,088	25·61
New Goch	16,400	14,692	17·92
Roodepoort United	8,850	9,654	21·82
Van Ryn Estate	21,150	26,459	25·02
West Rand Consolidated	32,000	35,782	22·36
	96,560	£109,802	22·74

Company	Total revenue	Profit
	£	£
Aurora West	9,655	528
Meyer and Charlton	31,361	17,273
New Goch	15,357	665
Roodepoort United	8,668	*986
Van Ryn Estate	28,426	1,967
West Rand Consolidated	41,028	5,246
	£134,495	£25,679
	Less loss	986
		£24,693

In calculating the revenue, gold has been taken at a value of 92s. per fine ounce, less estimated realisation charges.

TRANSVAAL GOLD MINING ESTATES.

The following are particulars of the output of the mines of the Transvaal Gold Mining Estates for the month of April:—Central Mines: Tons crushed 12,000, yielding 3,851 fine ozs. Elandsdrift Mine: Tons crushed 1,760, yielding 1,009 fine ounces. Vaalhoek Mine: Tons crushed 1,800, yielding 762 fine ozs. Estimated value of month's output, £25,253; estimated profit for month, £3,145. The gold output for the month is valued at £4 10s. per fine ounce net, after allowing for exchange and realisation charges.

The Late Mr. Forrester Brown.

The death occurred on Saturday last after a long illness of Mr. Forrester Brown, a former President of the S.A. Mine Worker's Union. The funeral took place on Monday and was attended by leaders of the Industry, the Unions, the Mining Industry Board and a host of personal friends.

UNION CORPORATION GROUP.

The following are particulars of the operations on the producing mines of the Union Corporation group for the month of April:

Company.	Stamps.	Tons Crushed.	Fine Ozs.	Revenue (Including Sundry Rev.) Total	Per ton	
					s.	d.
Geduld Proprietary	100	43,200	15,781	£72,726	33	8
Modder Deep	70	40,100	20,561	94,257	47	0
Totals and averages	170	83,300	36,342	£166,983	40	1

Company.	Costs Total.	Per Ton.		Profit Total.	Per ton	
		s.	d.		s.	d.
Geduld Proprietary	£44,759	20	9	£27,967	12	11
Modder Deep	40,297	20	1	53,960	26	11
Totals and averages	£85,056	20	5	£81,927	19	8

The above results are arrived at by valuing gold at £4 12s. per fine ounce. Realisation charges in excess of normal are debited direct to revenue.

GLYNN'S LYDENBURG.

The following are particulars of the output of the Glynn's Lydenburg for the month of April: Tons crushed 4,076, yielding 1,575 fine ozs.; estimated value of month's output, £7,071; estimated profit for month, £2,006. The above figures are exclusive of expenditure for the month upon shaft sinkng, special development and capital expenditure amounting to £1,069. The gold output for the month is valued at £4 10s. per fine ounce net, after allowing for exchange and realisation charges.

SWAZILAND TIN: OUTPUT FOR APRIL.

Concentrate recovered, 23·5 tons; estimated net profit for the month (taking tin at £145 per ton), £262.

SOUTH AFRICAN COAL TRADE.

The April trade review issued by the Standard Bank of South Africa, Ltd., reports as follows in respect to the South African coal industry:—

Reports from Durban indicate that competition from the United Kingdom has been severe at several points to which Natal coal is exported, notably India and the Straits Settlements, although the bunkering and export trade has been fairly well maintained by reason of the reductions in railway charges and pit-head prices.

Bunker coal is now selling at 35s. 3d. per ton at both Capetown and Durban, whilst export coal has been quoted as low as 18s. to 19s. per ton "free alongside" Durban. Average pre-war prices for bunker and export coal were about 17s. 6d. and 15s. 6d. per ton respectively.

With the prospect of continued strong competition in the market for export and bunker coal, progress of the industry in Natal will be severely hampered unless the charges for railage are again reduced and further reductions in the cost of production achieved.

Box 3807. Tel. 5892.
WRIGHT'S ROPES
H. ALERS HANKEY - - - Sole Agent.

Mozambique Portland Cement Co.

AN ATTRACTIVE DEBENTURE ISSUE.

In the advertisement pages of this week's issue will be found an abridged prospectus of the Mozambique Portland Cement Company, Ltd., which is issuing £100,000 first mortgage debentures bearing interest at 8 per cent. The company now offer for subscription 1,600 of these debentures of £25 each at £23 15s., which will yield the high return of 9·47 per cent. Reference to the financial statement contained in the abridged prospectus shows that the company is in a sound position (the security offered is more than three times the amount of this issue), and the proceeds of the present issue will be applied to completion of the factory and for the general development of the company and to provide for working capital. It is anticipated that the company will commence production on a basis of 40,000 tons per annum in August of this year, and the plant now being erected can be duplicated at very moderate cost. The whole of the cement-making plant, which is of the most modern design, has been supplied by the firm of Geo. Polysius; the complete power plant, consisting of Brush Ljungstrom turbine, motors, etc., is manufactured by the Brush Electrical Engineering Company, Loughborough, England; the boilers, with mechanical stokers, superheaters, economisers, etc., by Babcock and Wilcox; and the housing, consisting of steel under iron and glass roof, in extent 548 feet long by 111 feet 6 inches wide, has been supplied by the Glasgow Steel Roofing Company; whilst the chimney stacks are in reinforced concrete. The utmost economy has been observed in construction consistent with the greatest efficiency, and when completed this plant will be the most modern in existence, as the latest labour-saving devices have been installed and, therefore, the cost of production must of necessity be on the lowest scale. Arrangements have been completed which ensure the efficient management of the factory. The company has left nothing to chance, but has secured the services of the most experienced and skilful cement makers in the world for the erection and starting up of the factory. There are several very advantageous factors in connection with this proposition which may be emphasised here. In the first place the company is possessed of an illimitable quantity of raw material of exceptional quality for the production of a high-class cement. Secondly, the native labour is the cheapest in the whole of the African continent. Special attention is drawn to this most important point, as the expense of the manufacture of cement is to a great extent determined by the cost of labour. Thirdly, the whole of the eastern and western seaboards are open to the company for the sale of its products, and the cost of production is such that it will make it impossible for European or African cement companies to compete. The company has also in prospect the completion of some satisfactory overseas business. Fourthly, orders for large quantities of cement have already been received, and the whole of the company's output will be disposed of at figures defying competition round the coast, and which will still enable the company to make handsome profits. Furthermore, it is necessary to bear in mind another most important factor, viz., that the company is possessed of the sole right for the manufacture of cement in the Province of Mozambique for a considerable period, and enjoys also the privilege of importing all its machinery for one or more factories free of import duty. Thus it will be seen that the company is possessed of an absolute monopoly for the manufacture of cement on this part of the coast. Debenture holders will be entitled at any time before the 31st day of December, 1923, to convert the debentures into fully paid up shares at par, and thereafter, until the 31st day of December, 1924, at 30s. per £1 share. The debentures will be issued to applicants and registered in their names respectively, and will be transferable and capable of being pledged, and the company will register transfers of pledges thereof. The company's articles of association, debentures and copy of the bonds passed to Mr. A. Mackie Niven as trustee for the debenture holders, can be seen at the company's registered office during ordinary business hours.

Rand Mutual Assurance: Change of Address.

This company's offices have been removed to Chamber of Mines Building (3rd Floor), Main and Holland Streets, Johannesburg. The telephone and box numbers will remain as before.

The Busy Man's Page.

WHAT TO READ IN THE TECHNICAL PRESS.

Mining and Metallurgy.

Supports for Roadways, etc.—Iron and Coal Trades Review, April 14, p. 518.

Problems in Fan Pipe Installations.—E. & M.J. Press, April 1, p. 523.

Shaft Sinking in Limestone.—E. & M.J. Press, April 8, p. 576.

Lead Losses.—E. & M.J. Press, April 8, p. 580.

Effect of Dykes on Pitch of Ore Bodies.—Mining Magazine, April.

Coal.

Powdered Coal.—Colliery Guardian, April 13.

Coal vs. Oil Fuel.—Colliery Guardian, April 13.

The Flotation Process.—Colliery Guardian, April 13.

Engineering.

New Type of Reinforced Concrete Pipe Joint.—Engineer, April 14.

Time Element in Hardness Testing.—Engineer, April 14.

Electricity.

Electrical Research.—Iron and Coal Trades Review, April 14, p. 517.

Electric Tool Steel.—Iron and Coal Trades Review, April 14, p. 526.

The New Fiat Electric Furnace.—Iron and Coal Trades Review, April 14.

Power Station Design.—Engineer, April 14.

Super Power Stations.—Engineer, April 14.

Electricity in Agriculture.—Electrical Review, April 14.

Temperature Stresses.—Electrical Review, April 14.

Economics.

The Marketing of Pyrites.—E. & M. Journal Press, April 8, p. 573.

Industrial Psychology.—Electrical Review, April 14.

Gold Production in 1921.—Mining Magazine, April.

Oil and Oil Shale.

Oil Prospecting in Australia.—E. & M.J. Press, April 8, p. 585.

Currency and Credit.

To Mr. W. H. Clegg, Governor of the South African Reserve Bank, we are indebted for an instructive lecture on currency and credit delivered before the Pretoria Athenæum Club. The lecture has been reprinted in pamphlet form by the *Pretoria News*, and may be obtained from the Central News Agency.

Transvaal Manufacturer's Association.

We regret that on account of extreme pressure on space we are unable in this issue to deal with the valuable and interesting address of Mr. L. Serocold Skeets, O.B.E., President of the Transvaal Manufacturer's Association, delivered at the quarterly meeting of that Association on Thursday night. We hope, however, to devote some space to this next week.

SIEMENS-SCHUCKERT

HALF-WATT LANTERNS

—— TO SUIT ALL REQUIREMENTS, ——

AND TAKING LAMPS UP TO 1,500 WATTS.

(*A*). *With Refractor Band and Clear Bowl.*

(*B*). *Without Refractor Band with Opal Bowl.*

THE POLAR CURVES ARE STRIKINGLY DIFFERENT.

BRANCH OFFICE FOR SOUTH AFRICA:

C. KLEUDGEN, LTD.,

Corner of LOVEDAY and MARSHALL STREETS, JOHANNESBURG.

P.O. Box 1164. Telegrams: "KLEUDCO." Telephone Central 5435

"HUMBLE" SAFETY

DETACHING HOOK

SOLE AGENTS:

GEO. CRADOCK

——AND CO. (S.A.), LTD.——

75-77, CULLINAN BUILDINGS.

P.O. Box 316. Telephone 539.

Tel. Add.: "ROPES."

JOHANNESBURG.

ROBINS CONVEYING MACHINERY PARTS

¶ A large stock of machinery is in transit from our American Works, and will soon be available for prompt delivery. It includes:

- Robins Conveyor and Elevator Pulleys.
- Robins Ball-and-Socket Bearings.
- Robins Rigid Bearings (*Standard and Extra Heavy*).
- Robins Solid Boxes.
- Robins Safety Set Collars.
- Robins Ball-and-Socket Take-ups.

¶ The following stock is on hand for immediate delivery:

- Robins Five-Pulley Troughing Idlers.
- Robins Solid-Shaft Return Idlers.
- Robins "Durabelt" Conveyor Belt.
- Robins Idler and Bearing Grease Cups.

¶ Prompt deliveries for import of other items of Conveying Machinery can be effected.

ROBINS CONVEYORS (S.A.), Ltd.

(Head Office: Robins Conveying Belt Co., New York, U.S.A.)

BOX 4736, 'PHONE 4182, JOHANNESBURG

The South African Mining and Engineering Journal.

HEAD OFFICE: 176-180 Stock Exchange Buildings (2nd Floor), Fox Street, JOHANNESBURG, Union of South Africa.

Telephone **913.** P.O. Boxes **963** and **4573.**

Cables and Telegraphic Address: "Mining Journal."

Annual Subscription Rates: Oversea, £2; Union of South Africa and Rhodesia, £1 10s.; Local Delivery (Town only), £1 6s., payable in advance.

Agents for Great Britain and America: Argus South African Newspapers, Ltd., Byron House, 82-85, Fleet Street, London, E.C. 4.

Copies of this Journal are obtainable at all Branches and Agencies of the Central News Agency, Ltd., at all News Agents and Railway Bookstalls throughout South Africa, and at the London Agency as above.

CONTENTS.

PAGE

Topics of the Week 1233-1237

The Gamble of Gold Mining 1219

Heidelberg Reef Controversy Revived 1221

Enemy Shareholdings 1223

Finance and Information for Investors 1225

Geldenhuis Deep Year 1226

New Kleinfontein Position 1227

April Gold Output: Group Returns 1229

Mozambique Portland Cement Co. 1231

Belgian Congo:

Mining Developments in Katanga 1239

Share Market 1241

Trade and Industries Section:

The Week in the Mining Material and Engineering Trades 1243

Letters to the Editor 1249

Company Meetings:

Bantjes Consolidated Mines, Ltd. 1251

TOPICS OF THE WEEK.

The Mining Industry Board.

The evidence tendered to the Mining Industry Board is of such a voluminous nature that one cannot be surprised that the members of the Commission show signs of being overwhelmed by the immense amount of data submitted to them.

As we wrote last week, most of all this has been said, examined and embodied in reports before, but it has never before been offered to this particular Mining Industry Board. The lengthy statements put in, the evidence subsidiary to the evidence in chief, and the cross-examination of witnesses must already run into millions of words, and we must admit that we find it difficult enough to devote sufficient time to read all the testimony quite apart from attempting to condense or comment on the many contentions advanced and analysed. The shorthand writers must be having the time of their lives! The evidence is, however, of such a momentous nature and it probes so deeply into the fundamental facts of our economic position that we must in the space at our disposal do the best we can and allude to a few only of the many arguments which the members of the Board have listened to.

Last week we referred to the statement and cross-examination of Mr. Errol Hay, Technical Adviser to the General Mining and Finance Corporation. Mr. Hay's cross-examination was continued on Thursday of last week, and he was examined at length by Mr. Brace, Sir Carruthers Beattie and Mr. Price, of the Mine Workers' Union, on the subject of contracts. This was after a slight breeze as a question of head office salaries and charges.

A Question of Contracts.

On the subject of the alleged inefficiency of mine workers, Mr. Hay said that this made its appearance shortly after the war began. He disagreed with Sir Evelyn Wallers' opinion, expressed in 1918, that efficiency had improved. Mr. Hay then gave evidence on the no cost contract, representing in this connection the views of the Chamber of Mines. He explained that after the Boer War the flat contract was generally in force. Under that a man was given a certain price per foot or fathom, and he was debited with the total cost of stores and labour in breaking the ground. Any balance was given to him. There was no guaranteed wages. This form of contract had many disabilities, and there were large fluctuations in earnings.

There followed a system under which a man was given a guaranteed wage. Over and above that he had a flat contract, so much a fathom, and the price of stores and labour was charged against that, any balance going to him in addition to the guaranteed wage. On account of the guarantee his price per fathom was rather lower and his fluctuations were not so great.

It was proposed to substitute for that a no-cost contract. It was a no-cost flat rate contract with provision for additional payment per shift in respect of economies in use of labour and stores. A price was fixed by the company irrespective of the cost involved in performing the work.

This payment was intended to be a substantial portion of the contractor's earnings. The price per fathom was agreed to by the man before he started work. To give him an incentive to be economical, they said: We allow you so much per fathom for stores and labour and we give you any saving multiplied by the shifts you have worked. In that way the possibility of enormous fluctuations was done away with.

Mr. Hay stated that the men did not approve of the no-contract system, because they had not had an opportunity of going into the matter properly.

"What is the disadvantage of receiving big cheques?" asked Mr. Brace.

Mr. Hay: When a man gets a big cheque, say £200, he very often, to use a colloquialism, "goes on the bust." It leads to drunkenness in many cases. When it is heard that a man on one mine has earned a big cheque, men on others get dissatisfied and want employment on that particular mine.

Mr. Brace: Of course, it is very wrong of him to fritter this money away, but I am not sure that you can persuade me that it was a good reason for not paying him what he earned. (Applause.)

In the course of Mr. Hay's evidence it was divulged that one group is not in favour of the no-cost contract.

Randfontein Manager's Views.

Mr. G. H. Beatty, General Manager of the Randfontein Central Company, submitted a lengthy statement in which he dealt with the baneful influence of the status quo agreement and the colour bar on European efficiency. On Tuesday Mr. Beatty was cross-examined at considerable length by Sir Carruthers Beattie, Mr. Brace, Mr. Crawford and Mr. Lucas.

In the course of his evidence Mr. Beatty declared that shop stewards took matters out of the hands of the unions altogether. He had had a great deal to do with the South African Mine Workers' Union, and by far the most trouble was underground owing to such attitudes as the "go slow" policy. There was a feeling among mechanics to do a little less work than previously. This was not the feeling of the general man, but certain extremists held the men back. He had had a number of complaints from the men in the shops that they were not allowed to exceed a certain speed.

[illegible] Mr. Beatty [illegible] The interference with workers by shop stewards, shaft stewards and [illegible] committees, etc., was a subject that occupied several hours of discussion. Mr. Beatty did not adopt the line of argument that working underground in the mines of the Witwatersrand is a pleasant and restful occupation. On the contrary, he seems to regard it as an occupation better suited to natives than to Europeans.

The Industry Board and Trades Unions.

The question of the rights and recognition of shop and shaft stewards and of the trades unions generally is one of the most important aspects of the Industry that the Board has had to consider, and it has been discussed at great length. It will be recalled that at the beginning of March the Chamber in its historic epistle stated [illegible] dealings with the South African Industrial Federation, and this [illegible] the S.A.I.F. and all its ways was reaffirmed by the President of the Chamber at the annual meeting held a week or two ago. Mr. Brace, however, argued that the Chamber should be prepared to give every bona fide representative of actual employees of the mines recognition, and he explained the terms upon which that recognition would be granted. In view of the unenviable records of the trades unions [illegible] it could be surprised that the Chamber stipulated for conditions and made reservations, for it has been proved on more than one occasion on this Reef of violent convulsions that in periods of unrest there is no great gulf fixed between Rand trades unionism, direct action, employment of the general strike weapon and revolution. No one in this democratic age will deny the just aims and aspirations of trades unionism as trades unionism, but it would seem that in the Transvaal at any rate the legitimate functions of the movement are too easily usurped by councils of direct actionists who can speedily change an industrial dispute into Bolshevism and Red War. Last week-end there was an interesting passage between Mr. Brace and Mr. Gemmill on the subject of ballots and of individuals and unions. Mr. Gemmill very rightly contended the ballot on the calling of a strike should be secret, and Mr. Crawford pointed out that this could easily be included in the constitution of the unions. " But they don't keep it," interjected Mr. Gemmill.

The Autocracy of the Democrats.

The subject of whether employees should be compelled to join unions or not was then debated. Mr. Brace wanted to know why membership of a union was not made a condition of employment, to which Mr. Gemmill replied: We disagree with compulsion. A man is free to join a union or not as he wishes. " On this I talk feelingly," said Mr. Brace. " I never had any hesitation in making men join. If they would not join the union, by what right do you, as employers, expect the union's members to put up the money to conduct collective bargaining, leaving certain individuals outside the union to take all the benefits? I cannot conceive any union that had a kick left in it entering into an undertaking not to use its power in any way. The easier thing is to let the ballot be taken of the workmen on a mine and if they say they want to be in the union, then it must be a condition that any man coming in there must be a member of the union." Discussing the labour position in Britain, Mr. Brace said that the Rand might do worse than follow the examples of British labour. If the Chamber was going to have collective bargaining, the unions must be in position to carry out their obligations.

Mr. Gemmill remarked: When you see the amazing evidence we shall produce of the inability of the unions to control their members, and the extraordinary instances of interference by shop stewards, your comparison of conditions here with those in the United Kingdom will have entirely altered.

" [illegible] said Mr. Brace. " Many of the unions in Britain have been through the same experience. Their executives have failed to retain control. After all, have we not been living in an abnormal atmosphere, where values are given a different rendering by different people, and we are waiting now to get back to a normal condition of affairs, and I therefore ask the Chamber of Mines to reconsider it. I see nothing but trouble in front of this industry with anything like a series of conditions such as you have put into operation. I do think it is worth while trying to get back to a little better atmosphere, where goodwill will have more room to work."

Mr. Gemmill replied: You do not realise the extraordinary steps we took towards achieving that goodwill which you so rightly emphasise, and the result was absolutely the reverse of what we hoped.

In further discussion Mr. Gemmill told Mr Crawford the Chamber is most definite that it will not meet the S.A.I.F. because of its past action.

Mr. Brace then asked: You will be prepared to meet the representatives of every union in existence on the Rand of men employed by you?

Mr. Gemmill: On this particular point?—Yes.

We couldn't do anything else.

When Mr. Gemmill mentioned that in addition to the Engine-Drivers' Union, another union, the A.E.U., had accepted all but two of the Chamber's conditions of recognition, Mr. Crawford interjected that these two reservations might mean a lot.

Mr. Brace: I take up the [illegible] view of these proposals. The Chamber has come to serious decisions, some of which are worthy of reconsideration.

We do not see how in the light of recent happenings the Chamber of Mines, or for that matter any other employers, should be compelled to treat with mischief-makers, especially when those mischief-makers have no real trade interest in a dispute, but are simply political agents agitating for revolution and the overthrow of the Government. Neither do we see why men in this age of free speech and free action should be compelled to join institutions with which they do not wish to be associated. Compulsion of this kind is [illegible] in an age of [illegible]

What Agitators Cost.

The whole trades union movement, it seems to us, requires reformation, and its activities and aspirations should be regulated by new legislation, particularly in the Transvaal. In so far as Great Britain is concerned, the *Morning Post* during December, 1921, and January, 1922, has published an extremely valuable series of articles in which the present-day position of the trades unions is reviewed, mainly on facts culled from the 1920 balance-sheets of thirty representative unions. The articles have been cautious: their every statement has been backed by the official reports and balance-sheets of the trades unions: and it is clear that the plan has been not to attempt a full indictment but rather to give sufficient facts to justify a judicial inquiry. But even so the revelations are astounding as regards (1) the extravagance of management of some of the unions and (2) the open defiance of the law. It is shown that the percentage of expenses of management to receipts from members' subscriptions of the two great Friendly Societies (the Foresters and the Oddfellows) in 1920 was under 14 per cent. The percentages for some trades unions in 1920 were perfectly amazing. In the South Wales Miners' Union, for instance, 44 per cent. of income was absorbed in management expenses, and in respect of some unions it was over 55 per cent. Commenting on this in the *National Review*, a correspondent of that journal states: " When a trades union is " political " its expenses of management are shown to be very high, and the suggestion is inevitable that " other expenses of management " and huge payments to " delegations and deputations " may cover expenditure which is really political in nature, though under the Act of 1913 all political expenditures must be charged only to the political fund. Any restrictions sought to be set by the Act of 1913 on the levying of political contributions from dissentient members, or on the use of general funds for political or semi-political purposes, are proved to be illusory. If a union chooses to disobey the Act in letter and in spirit it is free to do so. In several unions, when a ballot was taken on the subject of levying a political fund, a substantial minority voted against, and yet in those unions it is shown that *all* members are now paying political levies.

Fair conclusions from the mass of facts and figures published by the *Morning Post* are (1) that there is no effective check on the waste of trades union funds, and in some unions the waste is great; (2) that there is nothing to prevent trades union funds being " invested " in revolutionary publications, such as the *Daily Herald*, and very many thousands of pounds have been so " invested "; (3) that under the heading of " Other Expenses " a trades union may have spent money on anything its bosses wished, from Soviet propaganda to junketing; (4) that any safeguards the 1913 Act intended against trades unionists being coerced into subscribing for Socialist politics are valueless and can be and are ignored. Is it not time, then, that the whole trades union legislation should be reviewed, with the purpose of securing to the workers the right of combination for collective bargaining, but effectively guarding against the political or industrial enslavement of the individual worker, and against the use of the trades unions for revolutionary and Socialist movements? . . . The vast majority of the working men of this country are sound patriots and honest citizens. But their very virtues make them the easier prey for rascals. They are, to a sad extent, in the hands of rascals now. The chief blame is with the Legislature, and it is the duty of the Legislature to take reckoning of past mistakes and of their consequences.

It would be interesting to know something about the financial positions of unions in this country and to have some exact figures showing what percentage of income derived from members' levies is absorbed by management expenses. The South African trades unions do not seem to court a vast amount of publicity in regard to their financial positions. It would be enlightening to know what moneys, if any, have been expended on political propaganda and on such productions as the recent strike daily which used to come out with astounding denials of economic facts and contained so much blood-curdling " Red " exhortation.

" Yankee " Capital and the Rand.

Sir Ernest Oppenheimer's evidence was on different lines to those taken by the witnesses already dealt with. Sir Ernest said that during the last few years he had done a great deal towards getting financial support for mining in this country, and with this object in view he seems to have convinced some influential New Yorkers that the Rand is a kind of Investors' Valhalla.' He said that since 1916 the group he represented had been instrumental in raising £7,500,000 for the development of mining in South Africa, not necessarily all for gold, but for diamonds and coal as well. That was apart from money appropriated from profits.

The position was that during the war it became quite evident that it would not be possible to keep on raising money in England entirely, while certain parts of the Continent were shut off. And it was evident that when the war would end, the Continent would not be able to find the money. So he made representations to American friends that there were great chances in South Africa. Eventually he succeeded in getting the group of Pierpont Morgan to entrust him with money. He was brought into touch with Mr. Hoover, now a member of the American Cabinet, who, in turn, introduced him to Morgan. He told the latter of the great possibilities of investing here lucratively.

Sir Ernest said that he made representations with regard to the satisfactory labour conditions, that they had not the interference in the employment of labour as in other parts, that taxation in South Africa was very favourable, and that the mines were worked economically and efficiently. On these representations he induced Americans to entrust him with money to put into South Africa.

Mr. Buckle: What were the particular points you found investors dwelled on?—That taxation was moderate, and on, as the Americans put it, no waste wage, and wage efficiency. There was also the hope of getting big returns.

What was the date of your visit?—I negotiated from 1916 onwards, but actually visited America only twelve months ago. I then again pointed out that the same favourable conditions prevailed. It would be useless to attempt to raise any further sums if there is going to be any differentiation in wages, overhead charges, or other matters.

Do you desire to get further money?—I am most anxious to, but until we know the conditions I would not have the pluck, and I know I would fail trying to raise further capital.

Sir Ernest made it clear that capital would fight shy of the Rand if differential legislation in regard to mines was introduced.

The Labour View.

So much for the employers' contentions. During the week the workers have presented to the Board a long statement entitled " A general survey of the important historical facts connected with and of the policies hitherto pursued in the mining industry, in so far as such a survey can throw light on the questions covered by the reference."

This was submitted by Advocate Lucas on behalf of the A.E.U., the Boilermakers, Ironworkers, and Shipbuilders' Society, the Ironmoulders' Society, the Reduction and Surface Workers' Association, the Building Workers' Industrial Union, and the Amalgamated Society of Woodworkers. The witnesses who are giving evidence in support of the statement are Messrs. A. Crisp (organiser, A.E.U.), G. Brown (Boilermakers' Society), and J. George Reduction Workers). In concluding this general statement, which comprises 38 pages of typewritten matter, the unions referred to say:—

> We hope that in the narrative which we have given we have shown that the resistance to the abolition of the status quo agreement is merely an incident in the story of our hitherto unsuccessful resistance to the constant pressure to squeeze us out as civilised workers from the principal wage-paying industry of our own country.
>
> We have confined the narrative to the Rand gold industry. If we turn to the coal mining industry, a glance at the figures of employment will show how far the process has been carried as far as the coal mines are concerned, and recent events have strikingly shown how impotent the few white workers left are to resist any arbitrary encroachment on their wages or rights, by employers who have the command of a large servile labour force.
>
> We have shown, from the reports of commissions which have sat, that such tendencies as those which we have tried in our own interests unsuccessfully to stem are inherent in the labour policy hitherto pursued, and we have shown from the same and other sources good grounds for holding that this policy is eventually disastrous both to ourselves and to South Africa. The alternative policy, which has been rejected, has, we hold, been so rejected not for reasons connected with the public interest or on genuine grounds of economic production, but rather out of respect for the practical economic power wielded by those who are in financial control of the mines.
>
> We claim that, as the commissions quoted have shown, the evil results of the present policy are patent to all who wish to see and who have any regard for the country's future.

When the Strike Became a Revolution.

Whilst the Mining Industry Board has been deliberating on ratios and the pleasantries of underground work the Judicial Commission appointed to inquire into the recent disturbances has been taking evidence, and there has been much already divulged which is illuminating and—we hope

—consequently. The evidence of Colonel Godley, Chief of Police for the Witwatersrand area, may be commended to those deluded persons who may have been inclined to believe what several members of Parliament not altogether dissociated from the disturbances have vainly endeavoured to prove—namely, that there were only 15 rifles in Benoni, that the Fordsburg machine-gun consisted of broomsticks and crackers, and that the commandos were bent on peaceful demonstrations throughout. Colonel Godley related how the union leaders admitted the strike had gone beyond their control, and in answer to Sir Thomas Graham's question "On what day did the strike become a revolution?" the Colonel replied: "On the day that Mr. R. Waterston brought forward his revolutionary resolution at the Johannesburg Town Hall." We hope that the Government will introduce measures which will render it impossible to adopt revolutionary resolutions in the future, or at least render it possible to immediately and severely punish anybody, no matter whether he be a member of Parliament or not, who by word or action plunges the country into bloodshed. It seems to us that the Government would be well advised in continuing for an indefinite period the state of Martial Law on the Witwatersrand. There is no hardship to the law-abiding citizen in the present condition of affairs prevailing in Johannesburg and on the Witwatersrand. The only persons who now object to the maintenance of Martial Law are the dangerous demagogues who make their livings out of the perils created by free speech and by the propagation of Bolshevist doctrines.

The Two Budgets.

The Minister for Finance and the Minister for Railways have presented their respective Budgets, and these have had somewhat different receptions. Mr. Burton's speech created a most satisfactory impression owing to the unexpectedly good position revealed and to the absence of any additional taxation. The deficit for the year 1921-22 amounted to £1,361,000, to which has to be added a £400,000 deficit standing over from 1920-21. There is still to credit, however, £460,000 from 1919-20, so that the net deficit is £1,301,000. For the coming year Mr. Burton has decided to introduce uniform estate and succession duties, and he promises to restore the penny postage as soon as possible. Excess profits duty expires this year as a revenue producer. Diamond export duty has been almost negligible for 1921, but Mr. Burton hopes for an improvement, and expects to get £360,000 from it against £143,000 last year. Customs and Excise, he anticipates, will bring in £578,000 more than last year, super tax £260,000 more, posts and telegraphs £108,000 and interest £361,000 more. Against this he has to set the loss from excess profits duty, £287,000 less from income tax, and £58,000 less from mining revenue. The net position is that the estimated revenue is £27,900,000, as against an estimated expenditure (including the strike supplementary estimate of £225,000) of £28,943,000. This gives an estimated deficit of £1,043,000. This will be met from loan revenues and increased taxation, already mentioned. The Budget, as a whole, is regarded as eminently sound and exhibiting a successful and opportune effort to reduce expenditure. Mr. Jagger's Railway Budget is a document of another colour. In place of the original estimated deficit of £693,380, the deficit for 1921-22 was £1,800,687, and this with the deficit carried forward from previous years brought the accumulated deficit at March 31, 1922, up to £4,399,571. These figures, moreover, do not include the loss on working the South-West Africa railways—the inclusion of which in the S.A.R. deficit will doubtless be strongly opposed in the coming debate. In explaining the deficit, Mr. Jagger said: "I need hardly mention that the unsatisfactory financial results for the year just closed were due, to a very large extent, to the strike and the disturbances on the Rand." For the quarter ended March 31 the loss on account of the latter was approximately £600,000 as compared with the Estimates. Dealing with the Estimates for 1922-23, Mr. Jagger said the total amount Parliament was asked to vote was £24,063,394, which was £2,631,521 less than the estimated expenditure for 1921-22. The gross revenue estimated to be obtained during 1922-23 was £23,952,176, and Mr. Jagger declared that the detrimental effects of the Rand upheaval would, he expected, soon be overcome. Mr. Jagger took a cheerful view of the general outlook. He said that there were indications of a revival of the bunker and export coal trade, which constituted such a large part of their traffic. Welsh coal prices had been gradually rising since January from 22s. 6d. to 28s. per ton, the present price, and there was an indication of an increased demand for coal due to the increased demand for shipping freights and the American coal strike. The Commonwealth Government Line had now commenced to bunker at Capetown, and other Australian lines had announced their intention of doing likewise. The cement traffic showed signs of improvement. One factory which had been closed since November had resumed operations. New industries in connection with coal were also starting up, thereby bringing new traffic to the railways. The building trade was improving somewhat, and the prospects before the diamond industry were better. Further reductions in working costs, not only in transportation but in industries generally, would undoubtedly tend to stimulate business. There was a tendency also for the volume of their exports to increase, which meant increased purchasing power and increased imports. The heavy stocks in the country twelve months ago had evidently been diminished during the last year, and though the strike had given them a nasty setback he thought that the volume of trade, which was the consideration most concerning the Railway Administration, should tend to increase gradually. As regarded expenditure, when he introduced the Budget last year he stated that there were only two methods of balancing accounts, namely, by increasing rates and fares, and by reducing expenditure. As regarded the former, he intimated that further increases in rates and fares would most likely adversely affect trade and result in a falling off in traffic, and that to his mind the only way to improve the position was to reduce working costs, which he considered were too high. Mr. Jagger mentioned the significant fact that at the present time no less than 5,655 miles of railway did not earn the interest on the £33,404,000 invested in them. He reviewed the new construction programme, including the Natal railway electrification, and had no difficulty in convincing his audience that he had made the best of a bad year's working. Though much less satisfactory than Mr. Burton's, Mr. Jagger's Budget must be regarded as, in the circumstances, as good as could be expected.

Our Mining Laws.

Many people considered that Mr. Burton's Budget, although it was singularly satisfying and contained none of the terrors of taxation that some pessimists predicted, was disappointing in one important paritcular. No mention was made of relief to the small mine worker, the prospector and the digger in respect of claim licences. It is therefore satisfactory to note that in the House of Assembly on Wednesday the Minister of Mines and Industries obtained leave to introduce two Bills, the first being to provide for the grant of certain base mineral leases, and the second for further amending the Transvaal Precious and Base Metals Act, the effect of which is to remit the Government share of claim licences and also to deal with the surface rights on the deproclamation of worked-out goldfields. The first readings of both measures were agreed to. The second of the former Bill was set down for Monday, and the latter for Wednesday next. By far and away the most important part of this new mining legislation is that dealing with the remission of the Government's share of claim licences. This measure of relief is very belated, but it is all the more welcome on that account. Nothing has yet been said by the Minister on the subject of fines. But in respect of concerns that have made genuine efforts to open up and prove mines we do not think that they should be penalised for being poor. Where genuine work has been done and capital has been exhausted the question of remitting fines should be considered, and as in Rhodesia credit should be given for work done. Our mining code is undoubtedly harsh. Only men or companies possessed of large capital can undertake mining operations in this country with any assurance of ability to see the thing through no matter how encouraging the prospects may be. Rhodesia is streets ahead of us in sane mining legislation, and it is safe to say that if the same measure of exorbitant taxation had been applied to the mines of Charterland during the early stages of their exploitation as are applied in the Transvaal there would not be half-a-dozen properties working in Matabeleland and Mashonaland to-day.

Katanga's New Route to the Coast.

Big developments are impending in the Congo Colony, that wonderfully rich dependency which covers the heart of Africa and lies to the north of the Rhodesias. It has been the recent policy of this Journal to keep readers informed as to developments up north, and in the forthcoming special number of the Journal will appear a lengthy illustrated article dealing with the advance in mineral industry and commerce of our northern neighbours. We are all too apt in the Union to live in watertight compartments of ignorance and to believe that inasmuch as we are the dominant State of Southern Africa happenings and ambitions up north are outside the realms of our own smug contentment, our revolutions and our politics. But there are in prospect in the Belgian Congo schemes which may eventually shift the centre of commercial gravity up to the north of Elisabethville, and we must not be so parochial as to ignore the facts that the Congo Colony has a new Governor, who seems to be a far-sighted hustler, that the Union Miniére has projects afoot to immensely increase its scope and production, and that a new transportation scheme which will deflect Congo trade from the southern routes out to the West Coast is in prospect. Next year the Belgians will commence the construction of a line from Bukama on the navigable waters of the Congo, the present railhead of the "Cape to Cairo" system, on to the navigable watres of the Kasai River near Busongo, where a deep water river harbour is available. Construction will proceed from both termini simultaneously, and it is anticipated that within six years from the date of commencement this new north-west route will be completed. If you consult a map you will see the Congo sweeping around northwards like a giant horseshoe and a fork—the Kasai—bending south-eastwards in the direction of Katanga. It is by means of this new rail and river route that the "Copper Rand" of the interior, probably the greatest cupriferous belt in the world, will do most of her trade in the future. What the effect of this new line of communication, this link that will bind Belgium with her great tropical dominion *via* the mouth of the Congo, will be remains to be seen. But obviously it will have its influence on the southern railroad systems, upon which Katanga now depends. And it will have its effect, too, on the uncompleted Lobito Bay line and upon the little appreciated schemes of Mr. Robert Williams, who has so valiantly followed in the footsteps of Rhodes and wants to see the line forging ahead northwards towards the Nile-Congo divide and the Egyptian Sudan.

In another portion of this issue will be found an interesting article dealing with recent and forecasted developments in Katanga which we recommend to the attention of those of our readers whose vision extends beyond the south bank of the Limpopo.

Notes & News.

Preference for Messina Mine.

The Provincial Council, on Tuesday night, adopted a motion requesting the Union Government, when calling for tenders for the supply of copper for the electrification of portions of the S.A.R., to give preference to South African copper, having in view the Messina Mine, notwithstanding the difference in price.

Important Work on Gold.

An important Report on Gold has reached us from the Imperial Mineral Resources Bureau. Copies may be obtained from H.M. Stationery Offices, post free at 6s. 5½d. per copy. In his introduction Prof. Sir R. A. S. Redmayne writes: The following digest of statistical and technical information relative to the production of Gold will form a part of the volume or volumes on the Mineral Resources of the British Empire and Foreign Countries constituting the Annual Mineral Conspectus of the Bureau. Although nominally covering only the period of seven years ended 31st December, 1919, the digest will be found to contain more recent statistical and other information relative to the British Empire and to certain of the more important Foreign Countries. In this, the first year of publication, an effort has been made to fill in, as far as possible, the hiatus due to the war in the publications relating to mining and metallurgical statistics. Labour, health and safety statistics have been omitted owing to the difficulty involved in procuring reliable information for the war period, but in future issues these statistics will be included in respect of each year. Resort will also be had to graphical representation of statistics of production, consumption, costs and prices. Weights of ore are expressed in short tons, that is to say, the ton of 2,000 lb. avoir., and values in pounds, shillings and pence at par rates of exchange. The short ton has been adopted as the unit of weight for ore by producers on most of the important gold fields of the Empire and on all the gold fields of the United States.. Mr. H. F. Marriott, a Governor of the Imperial Mineral Resources Bureau, is Chairman of the Advisory Technical Committee on Gold.

* * *

Solving the Ventilation Problem.

Mr. J. H Twiddy, in his annual report on the West Springs, has the following passage:—"Careful attention has been given to the ventilation of the main headings and these have been divided throughout their length with a nine-inch brick wall forming an intake and return airway. The dust and fumes from blasting and the contaminated air due to the presence of the workers are exhausted from the faces by means of electrically driven fans installed at the shaft station and ascend the shaft through the three northern compartments which are batticed off to form the upcast. This system of exhausting the fumes and dust within a few feet of the point of their generation and conveying them along the return airways—along which no persons travel—direct to the upcast compartments of the shaft is infinitely superior to the 'blowing-in' method, as the mine is at all times as completely free from dust and fumes as it is possible to make it. In fact, the faces are apparently free from fumes a few minutes after blasting. With the 'blowing in' method whilst the workers at the faces may receive at once clearer and cooler air, the rest of the mine is always contaminated more or less with the fumes and dust which have to find their way to the upcast along the travelling roads, and these roads usually take hours to clear sufficiently to admit of persons travelling along them under healthy conditions. The advantages of the 'exhaust' system are at once obvious on entering the workings, as the walls and roofs of the drives are found to be clean and free from dust, whereas in the 'blowing-in' method they are dust-laden unless hosed down at frequent intervals, and the process of hosing down, by disturbing the dust, increases the dust contents of the air in the vicinity of the operations. At such time as stoping operations may commence, the present system easily lends itself to the exhaustion of fumes and dust from each individual stope direct to a return airway, and this will go a long way towards solving the present problem of the satisfactory ventilation of the gold mines of the future."

We have always understood that ventilation by means of the "exhaust" system has for long been general practice on the Witwatersrand.

More Randfontein Litigation.

The Randfontein Estates Ltd., again appeared in the Supreme Court against Sir J. B. Robinson this week. The Judge President, in giving his decision, said that the question in dispute was whether the profits for which the defendant was to account was the amount for which he sold the shares in January, 1917, 15s. a share, less expenses, or whether they were represented by the shares themselves, or the value they had at the time when they ought to have been handed over to the company. That depended on the legal meaning of the word profits. The whole judgment showed that the Appeal Court regarded the action of the defendant in dealing with the Home Syndicate block as fraudulent. When, therefore, it ordered him to give an account of profits it meant that he should give an account of the shares received and which he ought, upon receipt, to have handed over to the company. The shares he received represented the profit he made, and the company was entitled to the true value of the shares at the moment when they should have been delivered to the company. The account was to be debated and evidence led as to the value of these shares. In the event of the parties failing to agree and a commission being necessary to take evidence in England on the point the Registrar would have power to nominate as commissioner the person agreed upon between the parties.

* * *

Position on the Rand.

There are now at work on the mines of the Witwatersrand 14,500 white men. This figure represents a considerable falling off from the figure of white employment in pre-strike days, a figure which stood at just over 20,000. Nevertheless, the figures as to white employment are showing a gradual improvement, a circumstance due to the gradual return of the natives to work on the gold mines. Some 130,000 natives are now in the compounds, as against a normal figure of 180,000. The task of getting repatriated boys back from all parts of South Africa and Mozambique has proved very difficult, and the job of making headway against the constant wastage of time-expired boys has, it would seem, not been easy. For every ten or eleven natives recruited from now onwards, one white man's job is thereby created. And if another 50,000 natives could be brought on to these fields it would so materially increase the number of white jobs available on the mines as to make a big hole in the unemployment question, in fact, to knock the bottom out of it.

* * *

Fall of Rock on West Rand Consolidated.

A nasty fall of rock occurred on the seventh level of the Rand shaft, battery section, West Rand Consolidated, on Monday week. After the relief gangs had been at work clearing the debris throughout the night and Tuesday morning, under Mr. G. D. Stephen, general manager, some thirteen natives remained unaccounted for at the compound. Mr. W. R. Hayes, underground manager, who was in the stope at the time, experienced a miraculous escape, being hurled a considerable distance through air concussion, but fortunately he was uninjured. From what could be gathered from the mine officials who were still at work underground, a mass of rock about 250 feet to 300 feet in length and 30 feet thick collapsed in the stope, where there was a working party of some 22 boys. Although they received no warning, the majority of the boys escaped, and it is confidently hoped that some natives, who were entombed, were able to save themselves from the crash. The work of extrication was being vigorously pursued by augmented gangs, and if any of the boys remaining underground are alive, and if human measures can relieve them, they will be released. No white employee has so far been reported injured. On Tuesday rescue parties were still at work in the stope, but owing to the enormous mass of fallen rock and the loose character of the roofing and walls the task of releasing the entombed natives was rendered extremely difficult and highly dangerous. It is now assumed that ten boys are lying buried.

Colloidal Silica.

An interesting lecture on the pathological effects induced by colloidal silica was delivered last week at the Scientific and Technical Club, Fox Street, by Dr. W. E. Gye, pathologist to the Medical Research Council in London. Dr. A. B. Tucker presided at this special meeting of the Witwatersrand branch of the British Medical Association. The lecturer described in detail the researches which have been carried on in England during the past five years, and which have shown that colloidal silica, a substance easily produced from silica, is a poisonous material. It was suggested that miners' silicosis was brought about by the slow solution of silica particles in the tissues, a conception of the process which explains naturally the observed facts of silicosis. The lecture called forth a great deal of discussion on the part of the leading Johannesburg research workers on silicosis as found occurring amongst the gold miners on the Reef.

* * *

The American Coal Strike.

The American coal strike still drags on, though little news filters through the cables. To the question, what the strike is about, we may reply with the coal trade organ: "The fundamental issue in the present controversy is one of wages. It is a question of whether the mine workers that pay tribute to Indianopolis shall acknowledge the play of economic law and accept a scale more in keeping with post-war readjustments or shall be permitted to set themselves above economic law as they have tried in times past, sometimes successfully, to set themselves above statute law. Therefore, when Mr. Gompers declares that the American Federation of Labour is back of the strike with all its resources, he is telling his followers that his organisation is back of a movement to prevent a reduction in the price of coal to the industries that give employment to his members. Is the mine-worker's pay envelope any more sacred than the butcher's, the baker's or that of plain John Smith? Shall railroad rates and coal prices stay up when everything else has been coming down? That is what the strike is about—that, and nothing else."

* * *

Gold and Currency.

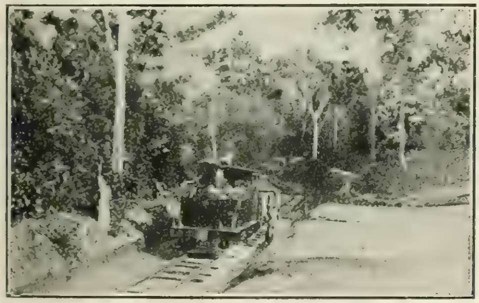
The question of gold in relation to currency continues to provide economists with a topic of discussion. During the week the methods available for stabilising the world's currency was the subject of a further lecture by Professor R. A. Lehfeldt. The methods to effect this, he said, could be divided into two groups, either the restoration of the gold standard, or the adoption of some form of inconvertible paper currency. There were modifications and intermediates, but these were the two types. The gold standard was very well known historically, before the war the greater part of the commercial world being based on it. Inconvertible paper money was in use in some countries practically as a matter of deliberate choice. The essence of the gold standard was that any other means of payment must be freely exchangeable against standard gold coin. For instance, the American dollar was defined as a certain weight of gold. Anyone possessing a banknote was entitled to demand payment in gold coin. Not only was the law required, but the custom. Not only must there be a legal right to obtain gold coin, but in practice it must be possible to get it. There had been instances where the banks had been reluctant to hand over gold. If a bank looked askance at a customer who asked for gold, then it was a hindrance to the gold standard. Moreover, the person who obtained gold from the central bank should be able to do with it what he liked. He should be able to melt it down or export it. If any restrictions were enforced, then the gold standard was not in use. In South Africa, for instance, the public was allowed to obtain coin, but not able to take it out of the country. Therefore they might just as well not have had it. Professor Lehfeldt went on to discuss the subject in many aspects, and will deal further with it in future lectures.

BELGIAN CONGO.

Mining Developments in the Katanga.

The Elisabethville correspondent of the *Bulawayo Chronicle* writes: "In the whole history of mining there is no more romantic chapter than that which may be written of the development of the great copper fields of the Katanga region of the Congo."—(From the *South African Mining Journal.*)

The Belgian Congo, and in particular that part of it known as the Katanga, is undoubtedly the most discussed portion of Africa at the present moment. To the vast majority the country is merely a name, yet it is destined to play a great, perhaps the leading, part in the future of Africa. The changes that have been brought about in the Katanga during the last decade, more particularly when one considers the handicaps experienced by the Belgian Government during the period of the Great War, are almost incredible. I quote from an article written in 1913: "The natural products are copper, trees, tsetse flies and matikinis. The female population is at the rate of one per cent. The value of time is as nothing. Amusements consist of military reviews, libel suits, and free fights." Compare this with the position to-day. In 1920 exports from the Katanga included 18,822 metric tons of copper, 34·7 of rubber, 58·7 beeswax, 28·6 ivory, 97·6 hides, 25·9 coffee, 474 rice, 251 palm kernels, and 311·6 of tin. The tsetse and matikini are almost in the same category as the brontosaurus. In 1921 the following was the return for the white population of Elisabethville: Men, 1,176; women, 547; children, 336; total, 2,059. During the year 1921 there were 84 European children born, against 18 deaths (including three still-born). To-day a fete of any description without special arrangements for the children is a thing unheard of.



On the Congo Railways.

The new Governor-General, Monsieur Lippens, has taken as his motto "Time is money." Indeed one may say that—possessing almost unlimited powers—he has done more for the Congo during his short association with the colony than others—hindered by red-tape—have achieved during long periods of office.

We still have our military reviews; there was a particularly smart turnout recently on the occasion of the celebration of the birthday of King Albert. But libel suits and free fights are becoming things of the past, and amicable settlement is gradually replacing the long-drawn-out process of litigation. The presentations of the local dramatic and musical societies are of a very high order, and compare favourably with the best productions anywhere in the south.

Naturally the commercial situation in the Katanga is almost entirely dependent, at the present stage of the country's history, upon the state of the copper market, and a great deal of the progress upon which I have remarked must be attributed to the enhanced price of copper during the war and immediate post-war periods. To-day copper is "down" and we are passing through a "slump." But it must be borne in mind that the whole world is to-day entering upon a new era. This is emphatically the case so far as the Belgian Congo is concerned. It is the War that has shown Belgium what the Congo really is. In Belgium the Congo was popularly regarded as a good place for the scapegoat, a sort of Bantry Bay. It was a country full of mystery, hazard, and adventure. To-day the elements of civilisation are reaching into the remotest corners of this vast colony. Elisabethville itself is a modern town, and with the execution of the municipal schemes now in progress it will hold its own with many important centres in the south. At the present moment, however, as I have said, "things are bad." The big corporations have been retrenching heavily with consequent loss to the commercial community. But, paradoxical as it may appear, there is no doubt that prosperity can exist when "times are bad." A community may prosper more when costs are low than when costs are high, and there is no doubt that a great deal more importance is now being attached to the question of costs than was the case during the period of inflation. The period of speculation having passed, the world must return to the old and legitimate methods of production. Reduction of costs and the improvement of the quality of the output must be the predominant features in the work of reconstruction. This will follow as a natural sequence because business men must realise that it is the only road to success.

Steamer on the Congo River.

In the Katanga we have entered upon this new era. The Union Miniére Company has elaborated a comprehensive programme of reorganisation of capital and increased production, and active steps are being taken towards the construction of what is known as the Kasai Railway, which will [illegible] ment. He intends to have a thoroughly comprehensive scheme of transport in operation throughout the colony in 1927. He favours low tariffs, maintaining that the increased volume of traffic will more than compensate for the reduction in rates. This Northern "all-Belgian" route is generally regarded as a political factor, but the necessity for such a route has been forced upon the Belgian Government by the prohibitive tariffs that exist to-day in the south. The northern is not a political, but a business proposition. I am informed upon reliable authority that the cost of transport for the export of copper through the north, *via* Bukama, Kabalo, Kigoma, and Dar-es-Salaam is roughly about one-third of the cost *via* the south. Even assuming this figure to be slightly exaggerated, it is not difficult to see why the local producer should favour the northern route, especially when the copper market is in its present state. Up to the present time [illegible] has been the Grand Lakes Shipping Company, a primitive concern that has been operating on the Congo River and Lake Tanganyika. The exploits of this company would furnish comic opera writers with material until the end of time. But it did not take Monsieur Lippens very long to make it clear that drastic changes would be made. The result is that to-day the northern transport people are able to guarantee shipments. This will mean the diversion of traffic from the southern lines, at all events for some time, unless the authorities are able to compete with the northern lines. Yet it is not so very long ago that I read a proposal in a southern newspaper to put an additional transit tax on copper passing through a southern territory! The south will have to devote a great deal of careful study to the Congo market if they wish to hold their present trade.

Mr. A. E. Wheeler, Consulting Engineer to the Union Miniére Company, has left for Belgium in connection with the erection of the proposed leaching plant at La Panda. It is not generally known that the present experimental plant is the only plant in the world which is capable of continuous operation. The proposed leaching plant is to be 50 times the size of the present installation.

The Immigration Laws are being strictly enforced, and intending visitors would be well advised to take a little additional care and see that they have everything in order before they leave for the Katanga. It will save a lot of inconvenience and not a little annoyance afterwards.

Delagoa Bay's New Coaling Plant.

We understand that the difficulties in connection with the foundations of the new coaling plant at Delagoa Bay have now been entirely overcome and there is quite a visible progress with the ferro-concrete walls, etc. The machinery and steel structure are already on the spot and erection on the wharfside will be started in a day or two. The contractors for the foundations expect to have them completed in about ten weeks. The foundation works on the wharfside are also well advanced.

MINES DEPT. EXAMS.
CERTIFICATES AWARDED INSTITUTE.

MANAGERS' EXAMS., September, 1921, January, 1922.

We obtained 15 out of a total 22 certificates awarded in South Africa

	Metal	Coal	Totals
Ours	9	6	15
Rest of S.A.	4	3	7
		Total for S.A.	22

OVERSEERS' CERTIFICATES (Metal).
So far as we know we have only had 6 failures during 1921, and secured two-thirds of the certificates issued in S.A. during the past twe years.

TUITION (Metal or Coal) by class, correspondence or privately
Mining Institute (Prof. Yates),
St. James' Mansions, Eloff St. Johannesburg

INVESTORS' DIARY.

Forthcoming Company Meetings.

(a) Annual general meeting; (s) special or extraordinary general meeting.

Meetings will be held in Johannesburg unless otherwise stated.

May 16.—Lydenburg Gold Farms, Ltd., (a), 3 p.m.

May 18.—Modder B Gold Mines, (a), 11 a.m.; East Rand Prop. Mines, (a), 12 noon.

May 23.—Rose Deep (a), 11 a.m.; Village Deep, (a), 12 noon; S.A. Land and Exploration Co., (a), 12 noon; Geldenhuis Deep, (a), 2.30 p.m.

May 26.—City Deep, (a), 11 a.m.; Robinson G.M., (a), 12 noon; Modder Deep Levels (a), 12 noon; Knight Central (a), 2.30 p.m.; Geduld Proprietary Mines (a), 3 p.m.

May 29.—Union Corporation, (a), 11 a.m.; West Springs, (a), 11 a.m.; Daggafontein Mines, (a), 11.30 a.m.; Springs Mines, (a), 12 noon; Brakpan Mines, (a), 2.30 p.m.; Rand Selection Corporation, (a), 3.15 p.m.; New Era Consolidated, (a), 3.45 p.m.

June 1.—Crown Mines, (a), 11 a.m.; Durban Roodepoort Deep, (a), 2.30 p.m.

June 2.—Rand Mines, (a), 11 a.m.

June 3.—Transvaal Coal Corporation, (a), 10.30 a.m.; Anglo-American Corporation, (a), 11 a.m.

June 8.—Meyer and Charlton, (a), 11 a.m.; New Primrose, (a), 11.30 a.m.; New Unified, (a), 11.45 a.m.; Langlaagte Estate, (a), 12 noon; New Goch, (a), 12 noon; Randfontein Central, (a), 3 p.m.; Roodepoort United, (a), 3 p.m.; Randfontein Estates, (a), 3.30 p.m.; West Rand Consolidated, (a), 4 p.m.

June 9.—Consolidated Langlaagte Mines, (a), 10.30 a.m.; Witwatersrand G.M. Co., (a), 10.50 a.m.; Cinderella Consolidated, (a), 11 a.m.; Aurora West United, (a), 12 noon; New State Areas, (a), 2.40 p.m.; Van Ryn Deep, (a), 3 p.m.; Rand Collieries, (a), 3 p.m.; New Steyn Estate, (a), 3.30 p.m.; Government Areas, (a), 3.45 p.m.; Sacke Estates, (a), 4 p.m.

Labour Control and Ruin.

Port Darwin, in the Northern Territory, is one instance in Australia where control by labour unions has completely ruined a town (says the *Sydney Morning Herald*). In 1919, 500 men were employed at Vesty's meatworks, and now there are only 27—various other industries and shows have closed. The town was a thriving settlement—now the grass is growing seven feet high in the streets, and property has depreciated 50 per cent. and there are many vacant houses. In spite of high wages the men were ever making demands for higher wages and more concessions, which were from time to time granted—yet the unions refused to guarantee freedom from strikes and "go slow" during the killing season. Result: the works have not reopened since 1919. Fat cattle are fasting on the station. The nationalisation of the liquor trade resulted in so great a loss to the Government that they have reverted to the old licensing system. The men said: "As Vesty's cannot replace us under three or four weeks, they must grant our demands otherwise thousands of cattle on the roads would lose condition and be unfit for grazing, and the meat in the freezers would go 'off' and be unfit for shipping." At one time 5,000 tons were in the freezing chambers waiting shipment. "Kill the capitalist" means "kill employment."

The Week in the Sharemarket.

ENEMY SHAREHOLDINGS—MARKET FAVOURABLY INFLUENCED.—ALKALIS RISE.

The market has been favourably influenced during the week by further London interest and also by the settlement of a portion of the Enemy Shareholdings, at prices which appear to be reasonable to shareholders. The settlement of the Union Corporation and Barnato stocks would indicate an early arrangement being made with the Corner House and Albus' interests.

The recent notice that the Industrial Leases Bill is to be put before the House on Monday, has had a good effect on S.A. Alkalis, the shares rising to 16s. 6d. on Thursday last. We understand the guarantors are still standing by their £50,000 guarantee and as soon as the Bill is passed immediate activities will probably be commenced on the property. With this prospect of protection the shares in this concern should be well worth looking into.

	Fri. 5th.	Sat. 6th.	Mon. 8th.	Tues. 9th.	Wed. 10th.	Thurs. 11th.
Anglo Am. Corp.	20 0*	20 7½	20 3*	21 0	20 3	21 0
Apex Mines	6 3*	6 3*	6 3*	6 3*	6 6*	6 3*
Aurora Wests						3 0
Bantjes Cons.	6 4*	6 4*	6 8	6 3*	6 3*	6 3*
Brakpan Mines	46 0*	46 6*	46 0*	46 6	47 0*	47 9*
Bushveld Tins	0 3*		0 4*	0 3*	0 4	—
Cinderella Cons		2 0*	2 3†	2 0*	2 3†	2 3†
City and Subs.	2 0*	2 2*	2 2	2 2*	2 2*	2 2*
City Deeps		43 0	44 0	43 0*	44 0*	45 0*
Clydesdale Colls.		–	–		–	21 3*
Con. Diamonds	14 6	14 10½	14 7½*	15 0	14 9	14 9
Con. Investments					25 0	25 6*
Con. Main Reefs	10 0*	10 4*	10 1*	10 4	10 3*	10 7½
Con. Mines Select.	10 0*	13 0				
Coronation Colls.		31 0*			31 0*	
Do. Freeholds	0 7*	1 0*		0 9*	0 6*	
Do. Syndicates	4 6	4 6*	4 6*	4 6*	4 8†	4 6
Crown Diamonds	5 11	5 10*	6 0*	5 11*	6 0*	6 0*
Crown Mines	35 0*	36 6		36 9*	36 0*	
Crown Mines Debs.	—					£105†
Daggafontein Mines	2 9*	2 10*	2 10*	2 11	2 10	-
E.R. Coals	1 6*	1 6*	1 6*	1 6*	1 7*	1 7*
E.R. Deeps	0 9*	0 9*	0 9*	0 9	0 9*	0 9*
E.R. Minings	10 9*	11 0*	11 0*		11 0*	11 0*
E.R. Props.	6 0*	6 3*	6 9	6 4*	6 9*	6 9*
E.R. Debentures		£85†	£85†	£85†	£82†	£85
Eastern Golds	0 6*	0 6*	0 7*	0 7*	0 7*	0 7*
Frank Smith Dmds	3 5*	3 6	3 7*	3 6	3 7b	3 6*
Geduld Props.	54 3*	54 9	56 0	54 9*	56 9	56 6
Geldenhuis Deeps			5 9*		5 6*	5 6*
Glynn's Lydenburgs	13 6†			13 0†	10 0*	13 0*
Govt. Areas	83 3	84 9	84 6*	84 0*	86 3	87 6
Hume Pipes	13 6*	13 6*	13 0*	13 0*	13 0*	13 0*
Jhb. Bd. of Ex.		35 0*			35 0*	
Knight Centrals	4 3*	4 3*	4 3*	4 3*	4 3*	4 3*
Lace Props.	8 0*	7 9*	7 9	7 9*	7 6*	7 9*
Leeuwpoort Tins	6 9†	6 6*	6 6*	6 6*	7 0†	6 9†
Luipaardsvlei Est.	2 0*	2 3*		2 3*	2 6*	2 6*
Lydenburg Farms	4 10*		5 0*	5 0		5 1*
Meyer & Charltons		60 0*			63 6*	
Middelvlei Est.	1 9*	1 8†	1 6*	1 6*	1 8†	1 6*
Modder Wests	1 0†					
Modder B.'s	28 9	29 6	30 10½	30 9	30 9	31 1½
Modder Deeps	42 0*	42 9	43 9	43 0	43 1*	43 6*
Modder Easts	7 9	8 1	8 9*	8 2	8 5	8 0
Natal Navig. Colls.	30 6*	30 6*	30 6*	30 6*	30 6*	30 0*
National Banks		220 0		220 0	220 0	
New Eland Dmds.	22 6*	25 0*	29 6†	27 6	27 6	27 0
New Era Cons.	5 9*	6 0*	5 9*	5 9*	5 9*	6 0*
New Geduld Deeps.	1 4*	1 4*	1 4*			1 4*
New Kleinfonteins	5 9*	6 1½	6 3	6 3	6 3	6 3†
New Modders	72 6*	74 3*	74 0*	74 3	74 3	76 0
New Primrose			5 6*			
New Unifieds	4 9†	4 9†	4 6†	4 9†	4 9†	4 6†
New State Areas	28 4*	29 0	29 3*	29 0*	29 0*	29 9
Nigels	5 0*	5 0*	5 0*	5 0*	5 6*	5 0*
Nourse Mines	11 6	12 3	12 3*	12 6	12 6	12 7½
Pretoria Cements	42 0*	42 3	43 6*	42 9	42 9	44 6*
Princess Estates	1 0		1 1*	1 0*	1 0*	1 0*
Rand Collieries		0 9*	1 0*	0 9*	0 9*	0 9*
Rand Mines	—	44 0		44 0*	44 0*	
Rand Nucleus			1 1*	1 1†	1 1*	
Rand Select. Corp.	50 0†	50 0†				
Randfontein Central	—	10 9*				
Do. Estates	16 0	16 10½	17 1½	17 0	17 0	17 4½
Rouxville Dmds.	1 2*	1 2*	1 0*	1 2*	1 2*	1 0*
Roberts Victors	8 6†	9 0	8 6*			8 6*
Rooibergs	3 6†	3 6†	3 0	2 9*	2 9*	3 0*
Simmer and Jacks	3 3	3 3	3 1*	3 3	3 3	3 2*
Ryan Nigels	3 0*			4 0†	4 0†	
S.A. Breweries				26 6*	26 0*	
S.A. Lands	4 3*	4 3*	4 4*	4 3*	4 3*	4 4*
Springs Mines	38 3	39 3*	39 6	39 6	39 6	42 3
Sub-Nigels	11 4½	11 9	11 9	11 6*	11 6*	11 9†
S.A. Alkali	12 6*	12 6*	13 0*	12 6*	12 6	14 0
S.A. Townships	8 4*	8 6*	8 8	8 6*	8 6*	8 9
Transvaal Lands				18 0†	18 0†	18 0†
Trans. G.M. Est.	8 6	8 3*	9 0		—	
Transvaal Silvers	16 3*	16 3*	17 0	16 6*	16 6*	16 6
Tudors	0 8†	0 8†		0 8*	0 8†	0 8*
Van Ryn Deeps	62 3	65 0	65 6*	65 6	65 6	68 3
Village Deeps	—	10 0†	9 0*	9 0*	9 0*	9 6*
West Springs	8 9*	9 3	9 3*	9 6	9 6	9 9
Western Rand Est.	3 7*	3 9	3 9*	3 7*	3 7*	3 9*
Witbank Colls.	39 3*			39 0*	39 6*	39 6*
Witwatersrands	11 0*			11 6*	11 6*	11 6*
Wit. Deeps	9 9	10 6*	10 0*	10 9	10 9	10 9*
Zaaiplaats Tins	1 10*	2 3*	2 3*	2 3*	2 3*	2 3
Union 5 per cent.	£101*	£101½*	£101½*	£101½*	£101½*	£101½*
Wolhuters	3 0*	3 1*		3 0†	3 0†	3 1*
Tweefontein Colls.		16 0†		16 6†	16 6†	15 6†

*** Buyers. † Sellers. a. Odd lots. b. Ex London.**

Exchange Rates, Johannesburg.

To come into force on Monday, May 8th, 1922. Selling Rates on London: T.T. under £100, par; T.T. £100 and over, ⅝ per cent. discount; Sight, under £100, par; Sight, £100 and under £500, ¾ per cent. discount; Sight, £500 and over, ⅞ per cent. discount. Buying Rates on London: T.T., 1½ per cent. discount; Sight, 1¾ per cent. discount.

The Making of Small Tools.

Although Great Britain was the pioneer engineering country and its manufactures cover practically every section of enterprise, there were one or two directions in which, for reasons which are a little obscure, British engineering firms did not trouble themselves at one time to give much attention. One of the most curious instances is in the range of small tools required by engineers. Among these tools are various kinds of callipers, squares, gauges, etc. Arrangements have now been made, however, for turning out in a British factory a complete range of all these necessary accessories. A factory which was erected during the war for the purpose of making magnetos has been adapted for the manufacture of these small tools; and already a very extensive range of extremely accurate and well-made appliances has been turned out. It is intended that the range will be rapidly widened so that every class of small engineering tool will be available from a British source.

Automatic Control for Hydraulic Presses.

The hydraulic press is a very ancient as well as a very widely used machine, and it finds one of its most profitable applications in the seed-crushing industry. In order to secure the highest economy in seed-crushing, the first part of the operation should be done at low pressure and the final stages at high pressure. Hitherto various mechanical arrangements have been employed to effect the control of pressure, but a British firm has just introduced a special valve by which the pressure is automatically controlled without the use of any mechanical details. From beginning to end the device operates without supervision and does its work much more accurately than with the old type, where the change in pressure was carried out at the discretion of workmen. The arrangement is extremely simple, and tests made on it go to show that its use will increase the oil yield from linseed by one-half to 1 per cent., while making a 50 per cent. reduction in the fluid which can be squeezed out of the cake.

HADFIELDS LTD.

EAST HECLA & HECLA WORKS, SHEFFIELD, ENGLAND.

Workmen Employed
During the War,
Over 15,000.

ERA
Trade Mark.

SOLE MAKERS OF HADFIELD'S PATENT

MANGANESE STEEL

Works Area,
Over 200 Acres.

The Supreme Material for the Wearing Parts of Stone Breaking and Ore Crushing Machinery, etc.

Complete
Stone Breaking
and
Ore Crushing
Plants.

Steel
Castings
and
Forgings
of all descriptions.

Group of Hadfield's Patent "ERA" Manganese Steel & Hadfield's "CHROME" Steel Wearing Parts for Ball Mills and Tube Mills.

Mining Requisites of all kinds, Grizzley Bars, Shoes & Dies, Steel Wheels & Axles, Balls for Ball Mills, etc.

Head Office for South Africa:
46 & 47, CULLINAN BUILDINGS,
JOHANNESBURG.
Box 5900 Tel. Add.: "Hecla"

Bulawayo Agents:
WHITMORE & JACKSON,
17 & 18, Agency Chambers.

Salisbury Agents:
P. PEECH & CO.,
Angwa Street

Natal Agents:
THOMAS BARLOW & SONS (S.A.) Limited.
Smith Street, Durban.

BELL'S UNITED ASBESTOS (Lond.)

AFRICAN AGENCY, LIMITED,

Telephone No. 345, Central, **24-26, CHORLTON CHAMBERS, HARRISON ST., JOHANNESBURG.** P.O. Box 2642.

SOLE AGENTS IN SOUTH AFRICA FOR

BELL'S UNITED ASBESTOS CO., LTD., LONDON.

(OLDEST ASBESTOS MANUFACTURERS IN THE WORLD).

VIEW OF GENERAL ABESTOS WORKS, HAREFIELD, MIDDLESEX.

"GLADIATOR" ASBESTOS CEMENT BUILDING MATERIALS.

Over 170 million square feet "Gladiator" Building Material supplied the British Government during the War for Army Hutments, Hospitals, Aerodromes, Munition Factories and the like.—Enquiries invited.

TRADE AND INDUSTRIES SECTION.

Week in the Mining Material and Engineering Trades.

BUSINESS DULL—AWAITING PENDING ISSUES—IRON AND STEEL—TIMBER AND BUILDING MATERIALS—OILS AND COLOURS—BY-PRODUCTS, LTD.—BRITISH TRADE CONDITIONS—GERMAN BID FOR EAST COAST TRADE—GERMAN DYES—METAL QUOTATIONS.

General.

Business this week, as was forecasted in our last issue, has been of a quiet character, and nothing much has been done apart from the usual demands from the mines at the commencement of the month, which have now dried up. A satisfactory feature in the week's trading has been one or two not inconsiderable orders from the north—Rhodesia—which, of course, are always welcome and help things along; but in respect of business nearer home the tale is not quite so flattering and has been below general expectations. But it is felt that as soon as the industry has got its full complement of native labour things will automatically improve—in other words, every month's accession of boys will mean wider employment of white workers and increasing demands for supplies on the part of the mines. Commercial circles are now, said a leading importer, experiencing a sort of lack of stability amongst up-country merchants—we don't know, he said, who's good and who's bad. Prices on the whole are practically unchanged, but inclined if anything to go lower rather than higher and in favour of the buyer. Some lines, on the other hand, are getting scarce and appreciating in value, such as steel plates in some sizes, of which shortages are already apparent. Linseed oil has advanced 1s. a gallon to about 7s. 9d. per imperial gallon, due to the crop shortage in the Argentine and India—the crop in linseed as regards acreage is much below what it was three years ago—the London market gauges this to a nicety; hence the rise in sympathy with the shortfall. Turps are about the same, 8s. per imperial gallon. In connection with wire ropes, we hear that the local association is now extinct as regards prices only, which may lead to keen competition.

As regards the general position, a commercial magnate said a lot of people were grumbling and a state of "Micawberising" was apparent—people were waiting for something to be cleared away before good business conditions could prevail. There was no doubt, he said, that the general merchant was feeling the effect of the present quietness. There was, he said further, in commercial circles a feeling that until the Industrial Commission had concluded its labours, no knowing what might happen which might retard the industry's progress—there were several propositions now being threshed out by the Commission which might upset all previous calculations. The brightest ray in the present gloom was, perhaps, the attitude of London financiers regarding the Union's position and potentialities as reflected by the Share Market, which is "talking" to some purpose and is giving heart of grace at the moment to many. In any case, said my informant, the low grade mines would be the first to benefit by some fair and amicable arrangement as to working costs. The building trade, which it was anticipated would at once forge ahead, is still lagging, but is expected to move vigorously as soon as a common level has been found. In view of the tremendous amount of work, public and private, awaiting commencement, this branch of industry will be the first, it is felt, that will go ahead when anything like settled conditions obtain. Mr. Jagger's Railway Budget has been received by the community in a sense rather of relief considering the deficits forecasted some time ago by the Minister, but that the South-West Railway deficit should be borne by the Union—*i.e.*, the Rand community—is against its sense of equity and justice. Nor are the taxation proposals promulgated to its liking. The hope expressed by Ministers that the gold premium will continue more or less at its present figure for twelve months is not shared by commercial men. The price of gold is undoubtedly going down, even if at the moment only by twopences, and in the opinion of good judges those twopences may be increased to shillings within a time not far distant. With regard to the world-fateful Conference at Genoa, the ultimate issues at the moment of writing are still obscure. Hopes as to results cut, of course, little ice. We should, however, now soon see what the upshot of the deliberations will be. In very influential circles here it is thought that European issues may within less than a month be fraught with tremendous consequences to the future of Europe. France, it is thought, may after May 31 march into the Ruhr Valley—at any rate make a demonstration commensurable to her present demands, knowing that her post-war German *vis-a-vis* will never be more formidable. And there is no gainsaying the fact that both in the English Parliament and social circles such action on the part of our ally would find no disfavour in many very influential quarters.

Ex-Enemy Shares.

Arrangements have just been concluded in Capetown between the Custodian of Ex-Enemy Shares and the representatives of the Rand mining houses for the taking over of a large number of shares which have been held in menace of the Stock Exchange for so many months. This settlement should have a stabilising effect on our market; it has indeed already been discounted, but with this stumbling-block definitely removed the Stock Exchanges on both sides should have a free lease of life.

Iron and Steel.

The beginning of the month inquiries from the mines have kept the Commercial Exchange and mining material houses fairly busy so far, but these demands having now fallen off business has assumed a quieter aspect. There is still liquidation going on, but prices here and there are firm-

TRADE MARK

MAGNOLIA
ANTIFRICTION METAL
"FLOWER" BRAND.

HAS THE LOWEST CO-EFFICIENT OF FRICTION.

KEEPS down the bill for lubricants, making **BEARINGS** smooth as glass and keeping them **COOL** under heaviest pressures and highest speeds.

Manufactured and Sold By—
THE MAGNOLIA ANTI-FRICTION
METAL CO. OF GREAT BRITAIN, LIMITED,
49, QUEEN VICTORIA STREET, LONDON, E.C.
Agents for South Africa: FRASER & CHALMERS, Ltd., Johannesburg,
Bulawayo and Salisbury

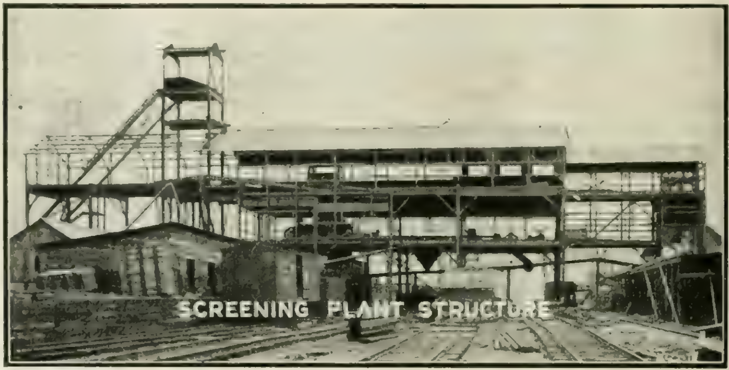
HEAD, WRIGHTSON & CO. (South Africa), LTD.,

SPECIALISTS IN

GOLD MINING PLANT, COLLIERY PLANT, BLAST FURNACE PLANT, AND ALL CLASSES OF GENERAL ENGINEERING.

COAL HANDLING, SCREENING and WASHING PLANTS.

Send for particulars of the "NOTA NOS" Coal Washer and "MARCUS" Screen-Conveyors.



P.O. BOX 1034, or

64-66, Standard Bank Chambers, JOHANNESBURG.

PRICE'S CANDLES

(Made in South Africa)

FOR MINING AND GENERAL USE

Burn Brightly & Economically

PRICE'S (South Africa) LIMITED

FACTORIES: CAPE TOWN & JOHANNESBURG

HEAD OFFICE: BATTERSEA LONDON

LONG ENDURANCE

IS WHAT DETERMINES REAL ECONOMY

especially in rod and valve packing, working under present-day conditions

To secure the economy of service, a packing must be made of better materials than the average high pressure packings.

The reason for the long service quality of

"PALMETTO"

REG. TRADE MARK

PACKING

is found in the high grade materials of which it is made. HIGH TENSILE STRENGTH AND PERFECT LUBRICATION OF EACH SINGLE STRAND.

Let us convince you that "Palmetto" gives longer service than other packings, by allowing us to send you, without charge, working samples to test under your own conditions. It will convince you.

Sole Manufacturers: GREENE, TWEED & CO.,
109, Duane Street, New York, U.S.A.
Carried in Stock by:
BARTLE & CO., LTD., Johannesburg.
E. W. TARRY & CO., LTD.,
Kimberley, Salisbury, Bulawayo.

ing up; steel plates, half inch and thicker sizes, are firmer but thinner sizes are below what they should be. The undercurrent in mining material circles is firm and hopeful, and having waited so long merchants are not too much inclined to grumble at any reasonable delay in the achievement of their hopes of better business conditions obtaining in the near future.

Latest Quotations.—Dunswart iron, 22s. per 100 lb. basis price; Union Steel Corporation, Ltd., 25s. basis; imported iron and steel, flats, rounds and squares, from 28s. 6d. to 35s.; channels and joists, 30s. to 32s. 6d.; imported angles, 32s.; smaller sizes, 33s. 6d.; tee iron, 32s.; shafting, ½ in. down to 3-16 in., 7½d. to 9d. lb.; ⅝ to 1½ in., 6½d.; 1¾ in. to 6 in., 5½d.; steel plates, 1-16, ⅛, 3-16, 23s. 6d.; 10 x 5 and larger, 25s.; spring steel, 7½d. to 8½d. lb.; bolts and nuts, hexagon, round, ⅜, 8½d. to 9¼d. lb.; ½ in., ⅝ and ¾, 40s. to 45s. per 100 lb.; hexagon nuts, ⅜, 8½d.; ½ in., ⅝ and ¾, 7½d.; fish plates, bolts and nuts, ⅜ in., 8d. lb.; ½ in., 6d.; ⅝ in., 5½d.; ¾ in., 5d.; dog spikes, 35s. per 100 lb.; rivets, ¼ in., 11d.; ⅜ in., 9d.; ½ in. and ⅝ in., 37s. 6d. to 40s. per 100 lb., ⅝ in. 50s.; brass rods, ¼ in. 1s. 5d.; ⅜ in. 1s. 3d.; ½ in. 1s. 2d.; ⅝ in. upwards, 1s. 1d. per lb.; hexagon brass rods, 1d. lb. extra; copper rods, ⅜ in., 2s.; ½ in., 1s. 11d.; ⅝ and upwards, 1s. 9d. lb.; tool steel, 2s. 11d. to 3s. 3d.; brass sheets, 1s. 10d. to 2s. lb.; copper sheets, ¼ in. to 18 gauge, 1s 10d. lb.; 20 gauge, 1s. 11d.; 22 gauge to 28 gauge, 2s. lb.; firebox copper, 2s. lb.; copper tubes, ¼ in., 3s. 3d.; ⅜ to ⅝ in., 2s. 6d.; ¾ to 4½ in., from 2s. to 2s. 4d. lb.; phosphor tin, 2s. 11d.; ingot tin (Lamb & Flag), 2s. lb.; ingot lead, £28 per ton; drill steel, 6½d.; hollow, 9¾d.; 1¼ in., 9d. to 10½d.; wire nails, 30s. to 35s.; shovels, 30s. to 40s. doz.; wheelbarrows, 40s.; picks, 37s. 6d. to 50s.; pick handles, 19s. 6d.; hammer handles, 14 in., 7s. 6d.; 18 in., 9s. 6d.; 24 in., 13s. 6d.; 30 in., 17s. 6d.; 36 in., 25s.; barbed wire, "Shorthorn," 69 lb., 13½ gauge, 22s. per coil; plain galvanised fencing wires, No. 8 gauge, 100 lb. coils, 21s. 6d. per coil; No. 10 gauge, 100 lb. coils, 24s. 6d. per coil; No. 12 gauge, 100 lb. coils, 26s. 6d. per coil; bulb tee fencing standards, 14 lb., 19s. 6d. per dozen; 12 lb., 23s. 6d. per dozen; black baling wire, 14 gauge, 19s. per coil, 100 lb.; 12 gauge barbed wire, 22s. per coil, 96 lb.; plain wire, No. 8 galvanised, 21s. per coil, 100 lb.; fencing standards, 12 lb., 20s. per dozen; droppers, 4 ft., 1½ lb., 3d. per dozen; screening, 3s. to 9s. 6d. per sq. yd.; cyanide, 1s. 7½d.; zinc shavings, 1s. per lb.

Second-hand Machinery.

Business in second-hand machinery lines during the past week has not been extraordinarily lively, excepting in some very heavy spares which have been sold lately in the form of crushers, certain companies taking advantage of purchasing these at low prices and stocking them against the day of requirement. There is still a demand for small batteries, but very little business seems to have eventuated, principally on account of many members of syndicates having met with a nasty knock during the recent strike period. But indications are good and syndicate members are no doubt putting by in order to start later on the many good things going. Many intend to work on the tube-mill system, which there is no doubt will prove economical and less expensive in working than many now operating, so that where a three-dwt. proposition was formerly disregarded people are now looking forward with lower working costs to the time when low grade dumps and untouched reefs will be made to pay. This all tends towards purchase of machinery, and it is anticipated that there will shortly be a good time for the second-hand dealer.

The engineering shops report this week on the whole fairly steady progress, but nothing big in the shape of contracts.

Earlier Stages of Iron and Steel Production.

A very interesting lecture was recently given before the Chemical, Metallurgical and Mining Society of South Africa on the subject of iron and steel metallurgy by Mr. J. Henderson, of the Newcastle (Natal) Iron and Steel Works, in which he traced the working of iron and steel and the improvements in plants and furnaces from the earliest times up to the present. We may have occasion to return to this very important subject shortly.

British Engineering Strike.

The response to the employers' opening of their works to men willing to accept their terms has been very small, and the works are heavily picketed. Nearly a million men are in idleness. The Court of Inquiry has commenced its investigations. A belief is abroad that political motives are behind the workers in the dispute, and so far no hopes of an early settlement are expressed as the proceedings presently being carried on are characterised by extreme bitterness.

The Making of Small Tools.

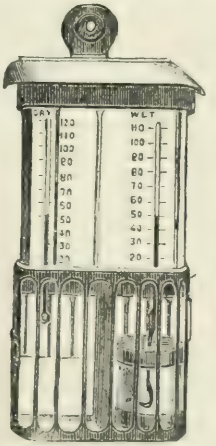
Arrangements have now been made by a British factory for turning out a complete range of small tools required by engineers, including various kinds of callipers, squares, gauges, etc. Heretofore very little attention has, strange to say, been paid to the manufacture of these, but now the matter has been taken in hand and a very extensive range of extremely accurate and well-made appliances been made which, it is expected, will be rapidly widened, so that every class of small engineering tool will be available from a British source.

Municipality and other Tenders for Supplies.

The Bloemfontein Municipality is inviting tenders per 15th inst. for one mile of 7-18 in., 4 core, paper insulated, lead covered, double steel tape armoured cable—600 volt pressure; and the Municipality of Victoria West for about 220 tons (2,000 lb.) of 10 in., 9 in. and 3 in. cast iron pipes, together with special castings and valves, or, alternatively, for 280 tons (2,000 lb.) of 12 in. and 3 in. cast iron pipes, together with special castings and valves, per 3rd July.

DAVIS-MADE

HYGROMETERS



FOR USE IN MINES TO ASCERTAIN THE AMOUNT OF MOISTURE IN AIRWAYS.

Fitted with porcelain scales, tubes divided on the stems, strong hinged metal protecting case.

Special leaflets, illustrating and describing the many other good things which are manufactured by **John Davis & Son (Derby), Ltd.**, will be gladly sent on request.

Sole South African Agents:

BARTLE & CO., LTD.,

LOVEDAY HOUSE. P.O. Box 2466
Phone 3553. Wires: "FAGGOT."
JOHANNESBURG.

AND AT

P.O. Box 444 .. .. KIMBERLEY
P.O. Box 1228 . . DURBAN

DAVIS-MADE MEANS HIGHEST GRADE

The [illegible] Municipality are asking for tenders [illegible] sets and equipment for power station, [illegible] amp. battery, and material for [illegible] distribution system. The Rand Water Board [illegible] by the 29th August 1922 for supply and delivery of cast steel pump cylinders, valves, etc., at the main pumping station, Zwartkopjes, and for electric cables, junction boxes, etc., at the main pumping station, Vereeniging.

British Shipbuilding Losses.

It is estimated that owing to the present engineering strike half-a-million of pounds will be lost to Britain and diverted to other quarters in respect of shipyard wages.

Pneumatic Plant for Road Construction.

A Leeds firm has developed a special type of portable air compressor for providing power to pneumatic hammers and pneumatic picks. The compressor is mounted on a steel frame carried on four rubber-tyred wheels. The engine works on paraffin and is direct coupled to the compressor, which can supply 10 cubic feet of free air at a pressure of 100 lb. per square inch.

Timber and Building Materials.

Business in timber during the week under review has been fairly good, but there have been no outstanding features. Stocks of timber are good; prices for Baltic timber are firm, especially for 3 x 9 deals. The building trade is progressing but slowly, no large contracts are on hand, but there is a certain amount of work being put through, and hopes are expressed that things will move in a week or two's time.

Timber prices: 3 x 9 deals, 1s. 1d.; scantlings, 10½d.; beaver boards, 4¼d. to 4½d.; floorings, 6¼d. to 6½d; ceilings, 4¼d. to 4½d.; Oregon, 5s. 6d. to 6s. 6d. a cube; pitch pine, 7s. 6d. to 8s.; corrugated iron, 8d. to 10d. Furniture timber: Burmah teak, 17s. 6d. per cube here for first quality, 14s. 6d. for second at the coast; American oak, 1 in., 10½d.; 1½ in., 11d.; 2 in., 11½d., at coast; and Japanese oak, 1 in., 1s. 1d.; 1½ in., 2 in., 1s. 2d., at coast; West African mahogany, 1 in. to 4 in. thick, 26s. 9d. to 27s. 6d. per cube at coast; Rhodesian mahogany, 9s. per cubic foot at mills; Honduras mahogany, 30s. per cubic foot; American yellow pine, 1s. 6d. per foot of 1 x 12 here; American pine shelving, 10½d. per ft.; 3-ply wood, 3 m.m. up to 5 m.m., alder and birch, 4d. to 6½d. per sq. ft.; oak and teak, 3-ply, 11d. per sq. ft. Prices for bricks are practically unaltered at: Klompje bricks, 25s. per 100 at works; fire bricks, £10 per 1,000 at works; mixed, 70s.; wire-cuts, £4 10s. to £5; and £5 for pressed per 1,000, at kilns; columns from 20s. to 30s., according to size; roofing tiles, Marseilles, £25 per 1,000 at the works; chimney pots, 12 in., 7s. 6d.; 15 in., 9s.; 18 in., 10s. 6d.; dry red oxide, 16s. per 100 lbs.; white lime, 7s.; unslaked, 10s. 6d. per 180 lb. bag; 8 lb. bag, 1s.; blue lime, 4s. 3d.; blue plaster lime, 5s. 3d.; cement, 11s. 6d. a bag; damp course and roofing, 36s., 54s. to 55s. for 1 to 3 ply.

Second-hand Iron and Timber.

Things remain quiet in the second-hand iron and timber yards; stocks are scarce and inquiries are not what they were expected to be; iron is 6d. and timber 8d.; but orders are few and far between

Electrical Goods.

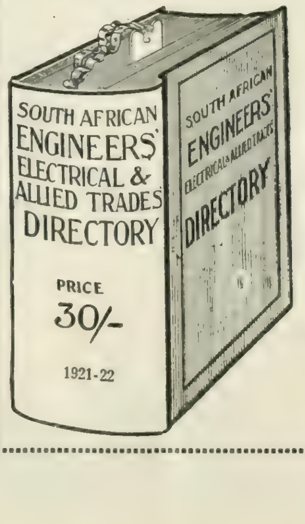
There is little change to report this week regarding electrical wares business, which remains much about the same, both as regards town and outside districts, if anything rather quieter than before. The fault seems to lie with the builders, whose operatives do not appear to be quite settled down yet, and therefore there is a restriction in business which was not expected a month ago. The mines are, of course, buying a little, but on the whole there is not that amount of work going which was looked for about this time. Stocks are satisfactory all round, and prices remain unaltered with as yet no intimations of change from oversea.

Oils and Colours.

Genuine white lead in oil, small sizes 10½d., 37s. 6d. per 50 lb. keg; English genuine red lead, 10d. per lb. in 6¼ lb., 12½ lb. and 25 lb. kegs, 35s. in 50 lb. kegs; genuine dry white lead, 1s. 6d. per lb.; linseed oils, raw or boiled, large bottle 2s. 6d., small bottle 1s. 6d. each, 7 lb. tins 7s. 6d. each, 4 imperial gallons 32s. 6d.; genuine spirits of turpentine, large bottle 3s. 6d., small bottle 2s. each, 10s. 6d. per ·83 imperial gallon; turpentine substitute 5s. 6d. per tin, each 5-6th imperial gallon; oxide in oil, 25s. and 29s. per 50 lb. keg; oxide, dry, 14s. 6d. per 100 lbs.; finest linseed oil putty in 100 lb. drum bulk, 4½d. lb.; English putty, in bladders, 6d. per lb.; colours ground in oil, 1s. 6d. to 4s. 6d. lb.; dry colours, 6d. to 10s. 6d. lb.; colours ground in water, 1s. to 10s. lb.; in gold size 2s. 6d. to 5s. 6d. lb.; ready mixed paints, 1s. 6d. to 2s. 6d. lb.; roof paints, 14 lb. tin 16s. and 17s. 6d., 70 lb. drum 75s and 82s. 6d; varnishes, 30s. to 47s. 6d. per imperial gallon; pumice stone, 1s. 3d.; beeswax, 1s. 6d.; orange shellac, 7s. 6d.; carbolineum, 5s. per 5-6th imperial gallon tin, 22s. 6d. per 4 imperial gallon tin, bottles, 2s. 3d. each; alum, in powder, 9d.; creosote, 4s. 6d. per 5-6th imperial gallon tin; gum Arabic, 3s. 6d.; gum benzoin, 7s.; methylated spirits, 5s. 6d. per tin, 5-6th imperial gallon, bottles 1s. 3d.; resin, 8d.; plaster of Paris, superfine quality, 24s. per 100 lbs.; caustic soda, 1s. 3d.; solignum, 8s. 6d. per .83 imperial gallon; seccotine, 1s. tube; tallow, 1s.; coal tar, per ·83 imperial gallon 4s. 6d., per 4 imperial gallon 17s. 6d.; Stockholm tar, per ·83 imperial gallon 9s. 6d., per 3 imperial gallon 47s. 6d.; common glue 10d., good quality cake 1s. 3d., finest Russian 1s. 6d.; gold leaf, English, plain, per book 3s. 9d., transferred 4s. 3d.; aluminium leaf, plain 1s. 9d. per book, transferred 2s.

By-Products, Ltd.

As stated previously in this journal, the By-Products, Ltd., are getting to work, and the first kiln of bricks has been taken out and other kilns are in course of completion. The activities in the yard are being carried out under the supervision of the inventor (Mr. Skinner), assisted by the staff, and it is hoped soon to see an engine with full load of bricks being taken on to the main line. The bricks are of a high quality and are an eye-opener to the industry as regards price and quality, suitable not only to the builder of the mansion, but also to the workman's cottage. The class of material turned out will enable the company to produce a brick for underground work and for ordinary street paving at a price meeting the present needs of high costs in the shape of taxation and high rents, and in the near future also of tiles of high grade capable of competing



S. A. E.
DIRECTORY.
1921-22 EDITION.
Including a Complete Mining Directory of
— South Africa —
PUBLIC SUPPLY
UNDERTAKINGS
RAILWAYS
TRAMWAYS
SUGAR MILLS
&c. &c.
Published by
S.A. Mining & Engineering Journal
Stock Exchange Building
Johannesburg

successfully with corrugated iron. It seems now practically assured that investors in this concern will soon reap a handsome reward for their speculation in the original company. The general public will, it is understood, have an opportunity at an early date of taking advantage of the reconstruction of the parent company in the way of share subscription. The present works of the company being inadequate to the amount of orders on hand, a fresh plant, more in keeping with the present and future demand on a large scale, is now under consideration.

British Trade Revival Anticipated.

Sir Robert Horne in the House of Commons stated he anticipated a revival of trade, helped by cheaper borrowing rates.

The retiring President of the London Chamber of Commerce (Mr. Stanley Machin) said he believed that the recent improvement in export returns would grow in the near future. He felt that, however important the European market was, we must mainly look to the development of the Empire for the industry's future. The Press warn the English public to expect an increase in the price of clothes on account of the rising prices of wool, which is interpreted as foreshadowing a boom in the Bradford market.

Mr. Barwell, Premier of South Australia, urged at Liverpool that trade should be kept within the Empire by distinct agreements between the Imperial and Dominion Governments, and advocated a conference of all Chambers of Commerce throughout the Empire, declaring that a conference of experts was better than a conference of Premiers.

Labour Troubles.

It is officially reported that 2,000,000 tons of British shipping is still laid up in the United Kingdom owing to trade depression, and as a result over 2,000 shipmasters and officers are unemployed.

Cheaper Houses in Britain.

Everything points to an early return to private enterprise and economic house building in Britain in consequence of lower wages, higher output of operatives, and the consistent drop in the prices of material. The Ministry of Health has just approved tenders for the erection of well-equipped houses in the Midlands for £300, compared with £685 quoted last year.

German Bid for East Coast Trade.

German shipping firms are establishing a fleet of special lighters suitable for towing from small port to small port which are either not accessible to big craft or not sufficiently attractive. These lighters have a capacity of 1,000 tons. One has already arrived from Hamburg and two others are on the way.

German Dyes vis-a-vis France.

According to the *Yorkshire Evening News*, an arrangement has been come to between the leading French dyestuffs company and the German Dye Trust, known as the I.G., whereby the Germans have agreed to give France all the technical assistance in their power—including the secrets of their laboratories, etc., and furnish trained German chemists to French factories to superintend their secret processes in the actual manufacturing operations. The French on their side have undertaken to confine their output of dyestuffs to France and her colonies and to hand over to Germany 50 per cent. of their profits.

The Ford Motor Car Company have decided to erect a new factory at Southampton, which will involve an expenditure of £500,000.

Diamond Rush in British Guiana.

Prospectors, it is announced, are pouring into the British Guiana diamond fields from the United States, South Africa and Holland. Five hundred carats have been brought back from the fields, but up to now no large stones have been found. The newly discovered diamond fields are on the Mazaruni River, 120 miles from the coast.

Metal Market Quotations.

London, 7th May.—Standard copper, £60 7s. 6d. cash, £60 15s. forward; electrolytic copper, £65 cash, £67 forward; standard tin, £149 7s. 6d. cash, £150 17s. 6d. forward; foreign lead, £24 7s. 6d. cash, £23 7s. 6d. forward; quicksilver, £10 17s. 6d.; bar silver, 35⅝d., and bar gold 93s. 3d. per oz.

NEW PATENTS.

Charles Paxton Markman and the Staveley Coal and Iron Co., Ltd.—Improvements relating to the distillation of solid carboniferous matter.

Standard Oil Company.—Process for the continuous production of low boiling point hydrocarbons from petroleum oils.

Percy Leonard Chapman.—Improvements in percussive rock drilling tools with renewable cutters.

Alexander Cameron.—Improvements in and relating to carburettors for internal combustion engines.

James Wright.—Improvements in drills or bits for drilling, or sinking, and counter-sinking holes.

Paul Healy Jerrard.—An improved positive drive in variable speed gear.

Edward Barrs.—Improvements in or relating to rabbles for low temperature coal-distillation purposes where a like movement of the material is required.

Thomas Harrison.—Improvements in haulage-rope supporting rollers for mine shafts, mechanical haulage tracks and the like.

Gabriel Christian Erasmus Keet.—Concentrator.

John Pollock, Ltd.—Plant for the development of power.

Thomas Arthur Fuller Torr.—An improved sluice and gate.

James Turnbull and John Henderson Smart. — Improved process of manufacturing new end on jack hammer chuck.

African Iron and Steel Products, Ltd.—Improvements in linings for tube mills and the like.

Walter William Strafford and Samuel Pick.—A new or improved process for the manufacture of solid fuel and the distillation of tar.

William Edward Harris.—Improvements in or relating to blasting.

Coal Discovery.

Coal, it is reported, has been discovered on a farm two miles from Vredefort at a depth of 65 feet. The seam is thick, and the coal is of excellent quality.

CARBIDE

—— ALL SIZES ——

IN 1, 5, 10, 50 lb. TINS
and 100 lb. DRUMS

Apply: MANAGER,
RAND CARBIDE, LTD.,
SOUTH GERMISTON.

'Phone 252 Germiston.

It pays to instal Hydromite

Why not use the Hydromite
.. for Back Stoping ? ..

It is designed and built for the job. It weighs only 58lbs.

It does not create dust, and Hand Hammer Drill Steels
.. can be used with it. ..

When you compare it with a Hand Hammer Drill mounted on a cradle doing the same work, it has the further advantage of being much less in initial cost and much lower
.. on cost of maintenance. ..

CLIMAX DRILLS

THE

CLIMAX ROCK DRILL & ENGINEERING WORKS

LIMITED.

INCORPORATED IN GREAT BRITAIN.

49, STELLA BUILDINGS,

Corner Rissik and New Streets, JOHANNESBURG

P.O. Box 4256. Telegrams "THUMBSCREW." Telephone 2794.

Letters to the Editor.

WANTED, A DIAMOND WASHING MACHINE.

To the Editor, *S.A. Mining and Engineering Journal.*

Sir,—Could you or any of your readers inform me where I can obtain a diamond washing machine capable of dealing with a very sticky diamond bearing clay? The plant should be capable of so loosening or disintegrating the clay that it can yield its diamonds without forming clay balls or lumps. I believe a Mr. Lawrie invented a suitable machine some years ago, and it was tested and used at a farm called Klipspruit, on the Vaal River, between Klerksdorp and Bloemhof. I should be glad if any of your readers can give me Mr. Lawrie's address or inform me where that machine now stands.—Yours, etc.,

"DIAMOND MINER."

[Perhaps some of our readers may be able to advise "Diamond Miner."]

IRIDIUM.

To the Editor, *S.A. Mining and Engineering Journal.*

Sir,—In your issue of May 6th there is a communication (from a correspondent) regarding Iridium. The communication contains a good many inaccuracies. In one paragraph the writer seems to infer that we do not even know how to extract the gold from the concentrate. It is perfectly unnecessary to roast concentrate—called black sands. I brought out a process some years ago, by which 98 per cent. of the gold contents having a 5 oz. per ton value or more, gave this extraction after 24 hours' treatment. However, enough said on that subject. Now for the Iridium. There have been several allusions recently in the local press to Iridium. These allusions remind me of my youthful days when I went in for bottom fishing. I remember how I and various writers advised the use of ground bait to attract the fish to a certain spot. All the various platinum metals vary tremendously in price and if the output of osmiridium were increased to any large extent I am afraid that considerable difficulty would be found in selling it. I feel perfectly certain that no Johannesburg bank has ever realised a single penny for any Iridium contained in the gold bars. On the contrary, during the ten years that I managed the Assay Office in the Standard Bank I remember sometimes small deductions were made for the presence of Iridium in gold bars purchased by London Buyers. I have refined several kilogrammes of platinum residues consisting chiefly of Iridium, Euthenium, Osmium and Paladium—and some Platinum. This was in the laboratory of the Ecole Normale, Paris. It would not require a very expensive plant to carry out these operations; but I do not think that it would pay. There are certain metals the buying and selling of which are confined to a few firms, and outsiders trying to handle these metals are liable to be badly left.—Yours, etc.,

ANDREW F. CROSSE.

Provincial Finances.

The Transvaal Provincial estimates were tabled this week, and are taken to mean increased taxation. A deficit of no less than £367,888 is anticipated for the year ending March 31, 1923. This figure is arrived at by assuming that the revenue for 1922-23 will amount to £2,872,300, which with the surplus of £263,110, from 1921-22 makes a total of £3,135,410. The anticipated expenditure is £3,503,298, and it is clear that some new taxation will be invoked to replace the proceeds of the Gold Profits Tax, Bachelor Tax, and Dwelling House Tax that have been abolished. The Administrator declared during the week that the Executive was exercising its great brain on the problem of increasing taxation, and we all know that that burden, whatever its form may be, will ultimately fall, as usual, on the unfortunate urban population.

Boring Through Earth.

Some time ago quite a sensation was caused in the engineering world by the appearance of a very simple contrivance for making a hole underground for an electric cable or other purposes without excavation along the route. The machine was used in a pit and operated by hydraulic action which pushed a ram into the soil and eventually, by means of extension pieces, thrust its way horizontally for as much as 150 feet. By this process holes up to 15 inches in diameter could be made under fields or roadways without disturbing the surface. The power for driving these machines was obtained generally from a petrol engine of about 8 horse-power; and the invention proved so successful that a strong demand has arisen for a similar appliance which could be operated by a hand pump. Machines of this type are now being produced and are proving of great service in making short borings under streets for the purpose of laying underground electric, water, and gas services. The smaller size is capable of boring holes up to three inches in diameter at a speed of about 60 feet per hour for a distance up to 40 feet and beyond. The larger size of hand machine makes holes up to six inches in diameter at the rate of about 30 feet per hour up to a distance of 150 feet. These machines are capable of operating in any kind of clayey or sandy sub-soil, and through any kind of ground which does not contain large stones, concrete, or similar obstructions. The time and expense of boring a hole in this way are very much lower than by the method which was necessary before this ingenious invention was perfected.

Reserve Bank.

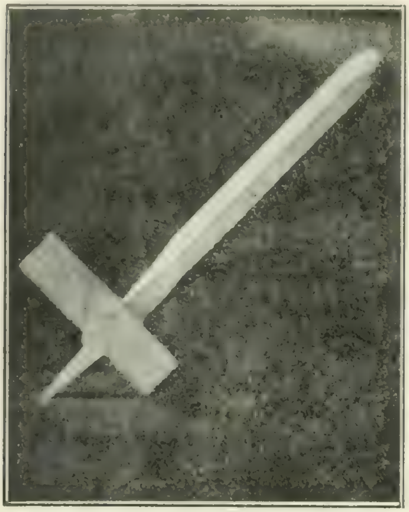
The statement of the bank for the week ended May 6th showed the ratio of cash reserves to liabilities to public at 82.7 per cent.

OSBORN'S
THE
STEEL PEOPLE.

WE ARE ACTUAL MAKERS
OF THE PRODUCT WE
OFFER YOU
THEREFORE
OUR PRICES MUST BE
RIGHT.

SAMUEL OSBORN
(S.A.), LIMITED,
Box 3162. 'Phone 4673.
JOHANNESBURG.
WORKS: CLYDE STEEL WORKS, SHEFFIELD.

SHOCK TOOLS



SHOCK Tools have always been the too frequent [illegible] problem [illegible] to avoid the [illegible] necessary to ensure extreme toughness and hardness [illegible] crystallisation in working.

"PAX" NONBREAK BRAND

The result of many years' [illegible] very near perfection in the solving of these problems.

[illegible] it has now been tested with results of uniform excellence for: Rivet Sets, Punches, Snaps and Pneumatic Tools generally, Mining Drills, Machine Chisels and Cold Sates, and has proved itself a steel that will stand punishment to the heaviest degree.

Being oil-hardening it does not [illegible] treatment.

Tested in the "S.B.N." Works on pneumatic chipping of high-speed steel ingots, a test chisel as illustrated has been subsequently driven clean through a block of mild-steel and then, without dressing, taken back on to chipping cast iron and cast steel ingots.

When correctly hardened the cutting edge is hard to the file test, but will not chip or break.

The first cost is naturally higher than standard qualities, but its durability and freedom from breakage make it a cheap steel in practice.

There are doubtless some tool jobs that give you trouble — try "Pax" Nonbreak Brand on them.

"Pax" Nonbreak Steel is manufactured by

SANDERSON BROS. & NEWBOULD, LTD.,
SHEFFIELD

Sole Agents for South Africa

BARTLE & CO., LTD.,

LOVEDAY HOUSE. P.O. Box 2466. Phone 3553. Wires "Faggot."
JOHANNESBURG.
And at KIMBERLEY and DURBAN.

Telegrams :
"NIVONIA," Johannesburg.

'Phones :
2196,—2197,—2198

J. & R. NIVEN, Ltd.,

ENGINEERS, CONTRACTORS, MERCHANTS.

BALATA BELTING
JAMES DAWSON & SON, Ltd.
BITUMEN SHEETING
GEO. M. CALLENDER & CO., Ltd.
BOILERS
PENMAN & CO., Ltd.
COAL CUTTERS AND CONVEYORS
JEFFREY MANUFACTURING CO.
COLLIERY PLANT
CAMPBELL, BINNIE, REID & CO.
DRILL STEEL
JOHN NICHOLSON & SONS, Ltd.
ENGINES, LOCOMOTIVES
ANDREW BARCLAY, SONS & CO., Ltd.
ELECTRIC LIFTS
A. & P. STEVEN, GLASGOW.
CRANES
BUTTERS BROS., GLASGOW.
HOSE, VALVES, SHEET RUBBER
THE LEYLAND & BIRMINGHAM RUBBER CO., Ltd.
LUBRICANTS
THOS. HINSHELWOOD & CO., Ltd
STEEL SCREENING
THOS. LOCKER & CO., Ltd.

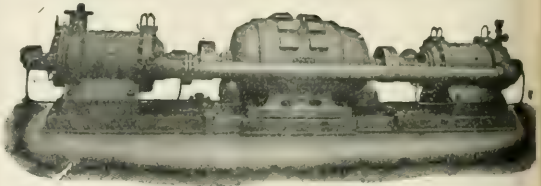
Barsdorf's Buildings, Marshall Street,
JOHANNESBURG.

SULZER

HIGH-LIFT CENTRIFUGAL

PUMPS.

For Mine Drainage, Waterworks, Etc.



Pumping Set suitable for lift of 2,500 ft.

LARGE LOCAL STOCKS IN MEDIUM AND LOW-LIFT PUMPS.

For particulars apply to:

RICE, WILSON & HERD,

86, 87, 88, 96, Standard Bank Chambers, Commissioner St.
P.O. Box 930 Telephones 2299 & 2300. JOHANNESBURG.

Also South African Agents for
CALLENDER'S CABLE & CONSTRUCTION CO., LTD.
BRITISH THOMSON-HOUSTON CO., LTD., etc., etc.

The Week's Meetings.

BANTJES CONSOLIDATED MINES, LIMITED.

LIQUIDATION DECIDED ON.

COMPANY'S HISTORY TO DATE.

At the twenty-fifth ordinary general meeting of this company held on 5th May, 1922, Mr. F. Raleigh, who presided, stated:

You will gather from the report before you that the only work done on your property during the past year consisted of the continuation of the Consolidated Main Reef Mines and Estate, Ltd., 11th level west drive.

At our last meeting, which was held nearly a year ago, I referred to the unfavourable values which had been disclosed in this drive up to then, and advised that the Board intended to continue it for 500 feet beyond a large dyke which had been encountered, and I stated that should the values still be unsatisfactory, shareholders would be called together to consider the liquidation of the company. The large unexploited claim area owned was in the opinion of your Board sufficient justification for thus pushing on the drive, as even then only about one-third of the company's claim area on the strike of the reef would be tested by it on this horizon, which, as you know, is about 500 feet below the company's mine workings.

Development Results.

This programme was completed during the year under review, and you were advised of the results in a circular issued on January 16 last, wherein it was stated that no tangible result had been obtained by the 2,271 feet of driving which had been done from the company's eastern boundary. The average reef disclosures over 1,195 feet on reef were 20.8 dwts. over 6 inches, or 125 inch-pennyweights, which is not payable.

The report before you confirms this, and gives particulars of the values obtained in the drive during the past year, when it was advanced 608 feet, disclosing main reef leader for a distance of 310 feet, of an average value of 17.2 dwts. over 5 inches, equal to only 87 inch-pennyweights. Another borehole was put in from the drive to the south reef, which again proved it to be valueless on this horizon.

All work in the drive was discontinued on January 9, 1922.

In accordance with the Board's declared policy, an extraordinary general meeting of shareholders has been convened and will be held immediately after the conclusion of this meeting, to consider the question of placing the company in voluntary liquidation.

You have before you the Board's view that there is no hope of discovering pay ore, which opinion is based on the erratic values obtained in the development operations in the lower levels of the mine, and the unpayable values encountered in the exploratory drive from the Consolidated Main Reef Company's boundary, which I have stated has been continued for a length of 2,271 feet out of the 7,000 feet of lateral claim area held.

I would remind you that at the lowest level of the mine (18th) values were disappointing, and that on the 17th level for a distance of 225 feet sampled the average value was found to be barely payable—just over 200 inch-pennyweights.

You are aware that, at the time it was decided to close the mine, working losses had been made totalling £35,200 for the previous 2½ years, during which time the ore reserves were depleted owing to the payable tonnage developed not equalling the tonnage mined and on account of the raising of the pay limit due to the increased working cost.

An estimate of the ore reserves was made when the mine was closed at the end of 1918, which showed that there were available and accessible to the Incline Shaft [illegible] tons of an average value of 6.3dwt., and in addition there was a considerable tonnage in blocks scattered throughout the mine, the average value of which was in the neighbourhood of 5.5dwt.

You will recollect that a free market in gold was only obtained after the close of the war in September, 1919, when the price rose above standard, and that soon afterwards the consulting engineer reviewed the position of the mine to determine whether the altered conditions brought about by the increased price for gold justified its reopening. He then stated a reconsideration of the ore reserve position based on a pay limit of 5.5dwt. indicated that the mine contained ore reserves totalling 214,600 tons of an average value of 6.35dwt. contained in 69 blocks covering a length of strike of 7,000 feet, and a dip of 3,600 feet. He reviewed the position from two points of view, first the reopening of the mine for working the existing ore reserves, and second for the development of the southern area. His conclusions are stated in the company's 23rd annual report for the year ended December 31, 1919, clearly demonstrating in the case of the first that £100,000 would have to be expended on de-watering, re-equipping and reconditioning the plant with only a possible profit, exclusive of taxes, of £66,000, when calculating the price of gold at 25 per cent. above standard, and that the second would involve an expenditure of £270,000 which the poor values in the exploratory drive did not then and does not now justify.

Liquidation Aspects.

Your Board, after giving very full consideration to all the factors, are satisfied that the only course now open is to liquidate the company and distribute the proceeds to shareholders.

In addition to the cash and cash assets of £136,728 referred to, the company owns the following assets:

Mining area, equal to 820 claims and water rights, freehold, in extent 1,420 morgen, which includes the unsold portion of Florida Township.

The mine equipment, which is practically intact, and which includes quarters and cottages.

It is impossible for me to give you an accurate estimate of the realisable value of these assets. It will not be easy to dispose of the company's freehold rights, including the unsold portion of Florida Township and the mine houses at anything approaching their value, unless a very considerable period is allowed for their disposal, and in this connection should you decide on the liquidation of the company, it may be advisable in, say, a year's time, to transfer such assets, together with any other unrealised assets, to a small township company, and to allot the vendors' shares to the shareholders of the Bantjes Consolidated Mines, Limited, thus avoiding inevitable delay and expense in liquidation and losses due to forced sales.

I wish to refer to a matter which I think is deserving of your consideration. When, in 1915, it was found that milling operations resulted in a loss, the directors voluntarily accepted half the fees due to them, and this procedure was followed until the end of 1917. From that date to the present time, namely, a period of over five years, all fees have been waived, and the remuneration thus relinquished amounted at the end of last month to £9,000, of which £8,000 is for the period during which no fees have been drawn. During this period, which includes one year of milling operations, the Board has given very great attention to the company's affairs, the work in connection with which has been very considerable. It is not competent for this meeting to vote any bonus to the Board for their services during the above mentioned period of five years, but it is hoped that the services rendered will not be overlooked at the liquidation meeting which follows, when one of the points to be decided by shareholders will be the fees payable to the liquidators.

I now beg to move that the directors' report, the balance sheet and accounts for the year ending Decmber 31, 1921, be received and adopted.

The report and balance sheet were adopted.

Over Two and a Half Millions Working Costs.

At the liquidation meeting, the chairman stated:

As you have decided on the liquidation of this company, I would like to quote a few figures relating to its financial history.

You are aware that in addition to being a gold mining company it owns extensive freehold ground, including the Florida Township. It was formed in 1895, i.e., 27 years ago. The amount of cash working capital put up on its formation and subsequently was £959,009. This sum is quite apart from any vendors' shares paid for the mining property acquired, and with the exception of £79,000 which was paid in cash for the freehold rights purchased, including Florida Townchip, the whole of this sum has been used in the development and equipment of the mine.

Milling was started in August, 1910. In all 2,198,580 tons of ore have been treated in the nine years during which milling operations continued. The ore treated produced gold to the value of £2,738,096, against an expenditure of £2,520,522 for working costs, leaving a working profit of £266,471. This profit has been dealt with as follows:

Paid in taxes	£20,289
Paid in dividends to shareholders	119,298
Balance of cash and cash assets	126,884
	£266,471

If you allow a certain sum for the break-up value of the remaining assets you have the complete picture.

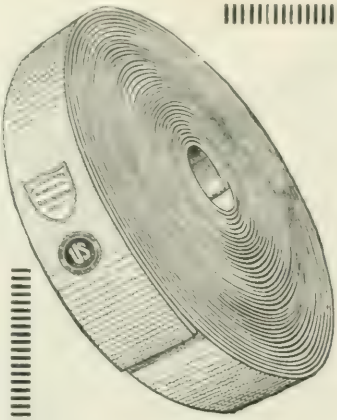
The working capital of £959,009 was subscribed over the years 1895 to 1910. The sum paid in dividends and the cash and cash assets on hand total £246,182, which sum is, with the break-up value of the remaining assets, all that shareholders will get for the investment of the capital put up. That is to say, they will have lost quite two-thirds of their capital and have no interest on their money invested for varying periods from 11 to 27 years.

The company has expended in its 27 years of existence:

On capital expenditure	£959,009
On working costs	2,520,522
On-taxes	20,289
Total expenditure	£3,499,820

the bulk of which has gone in wages and stores, etc., to the general community.

In these days it is just as well to bear in mind that the investment of capital is not always remunerative, especially in mining, and that if some such ventures pay well others do not. The incentive to the investment of capital in mining is the chance of large profits; take away that incentive and it will be a poor outlook for that portion of the general community in South Africa which lives on the Mining Industry. It should be readily conceded that capital invested in mining ventures is entitled to a much higher rate of remuneration than ordinary investments, consequent on the great risk taken.



Rainbow
—the Better Belting

Rainbow Friction Surface Belting is better because it is a perfectly balanced combination of Duck and Rubber, and because it is designed by the World's oldest and largest Rubber Manufacturers for severe transmission service.

Try ONE Rainbow Belt.

United States Rubber Co. (S.A.), Ltd.
(Late India Rubber Products Co. (S.A.), Ltd.)
OLD STANDARD BANK BUILDINGS,
65, COMMISSIONER STREET,
Phone 4201. Box 4945. Tel. Add.: "IRPCOSA."
JOHANNESBURG.
CAPE TOWN and DURBAN.

Rainbow Belting has amazing tensile strength, grip and length of life.

EXPLOSIVES
FUSE
DETONATORS
ACIDS
CHEMICAL PRODUCTS
SHEEP DIP
CATTLE DIP
ETC., ETC.

CAPE EXPLOSIVES WORKS, Ltd.
P.O. DYNAMITE FACTORY,
SOMERSET WEST, C.P.

THE TRANSVAAL
COAL OWNERS ASSOCIATION
(1910), LIMITED
Head Office: GENERAL MINING BUILDINGS, JOHANNESBURG
P.O. Box 1197 Tel. Add: "COALSALES."

HIGH-CLASS STEAM COAL.

From the WITBANK DISTRICT of the TRANSVAAL COALFIELDS.

Steamers calling at the Ports of Lourenco Marques and Cape Town can be supplied with Bunker Coal at short notice and with quick dispatch.

Large quantities of the Association's Coal are regularly exported to India and elsewhere.

Capacity of Collieries - - 600,000 tons per month.

THE ASSOCIATION'S COAL IS REGULARLY USED BY

South African Railways and Harbours
Empreza Nacional de Navegacao
Caminhos de Ferro de Lourenco Marques
Union Castle Mail Steam Ship Co., Ltd.
Clan Line of Steamers, etc.
Ellerman Harrison Line, etc.

AGENTS IN LOURENCO MARQUES:
Mann, George & Co. (Delagoa), Ltd.
Allen, Wack & Shepherd, Ltd. Delagoa Bay Agency Co., Ltd.

AGENTS IN CAPE TOWN:
Mann, George & Co. (South Africa), Ltd.

LOCKING UP LYDENBURG—GEDULD'S NEW PLANT—AFFAIRS OF THE NATIONAL BANK.

The South African
Mining & Engineering Journal
THE ONLY WEEKLY MINING PAPER IN THE CONTINENT OF AFRICA.
Established 1891.

Vol. XXXIII., Part I. JOHANNESBURG, TRANSVAAL, SATURDAY, MAY 20, 1922. No. 1599.

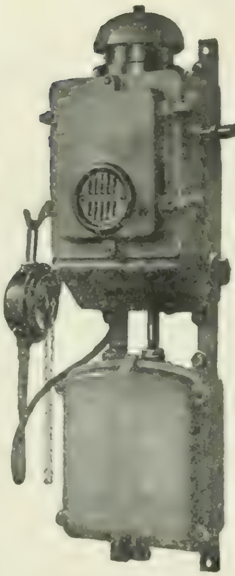
Scenes from the Pilgrim's Rest Gold Fields.

(Top) General view of the New Lisbon Berlyn Company's Mine, north of Pilgrims Rest, looking east.
(Bottom) Narrow stopes in Beta Reef, Beta Mine, near Pilgrims Rest.

We are indebted to the Geological Survey for the two photographs given above. Elsewhere in this issue will be found an important and critical article dealing with the Pilgrims Rest-Lydenburg area.

SIEMENS BROTHERS
AND
COMPANY, LIMITED.

MAGNETO MINING TELEPHONES



Hermetically sealed DIAPHRAGM behind extra strong GRID.

Gold plated DIAPHRAGM.

Very strong Dampproof CORD.

Closed.

DEFIES { Damp
Dust
Inflammable Gas
Rough usage
Noise

Powerful (1600 Ohm) Watertight SIEMENS BELL.

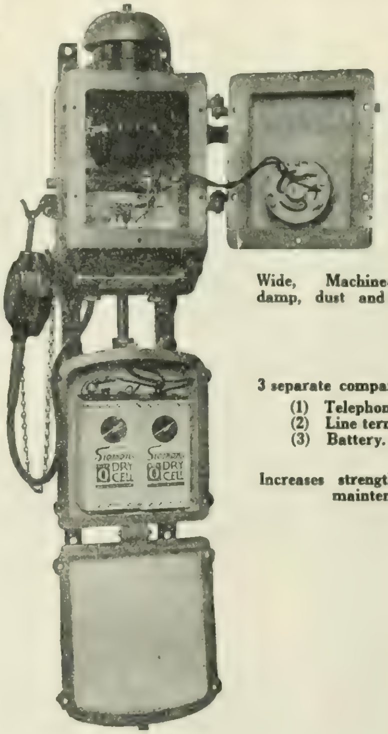
Very powerful hand GENERATOR.

Bare, tinned, copper internal CONNECTIONS.

Loud speaking RECEIVER

CORD specially reinforced here

Highest quality dry-cells.



Open.

Very efficient renewable CAPSULE TRANSMITTER.

Wide, Machine-faced joints damp, dust and flame proof

3 separate compartments for:—
(1) Telephone.
(2) Line terminals.
(3) Battery.

Increases strength. Decreases maintenance.

The above is pattern No. 10. Another—No. 10a—is equipped with two receivers.

Representatives in South Africa :

A. J. G. SIMPSON, A.M.I.E.E,
African Life Buildings, 85, St. George's St.,
CAPETOWN.
P.O. Box 239 Capetown. Telephone : 1202 Central.

G. H. B. BERNARD, A.M.I.E.E.
9-10, Cotts Buildings, Rissik and Fox Sts.,
JOHANNESBURG.
P.O. Box 7404 Johannesburg. Telephone : 408 Central.

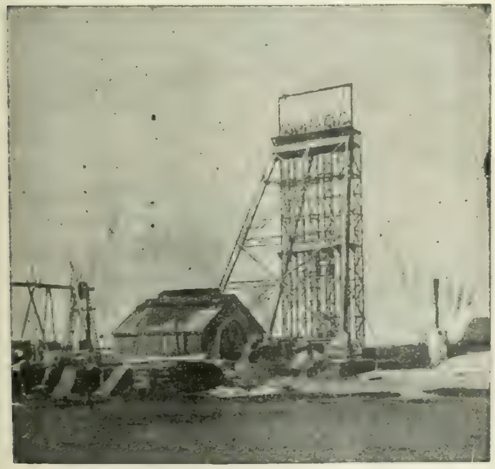
Telegrams : "SIEMENS."

Additional Crushing Plant at the Geduld.

NEW STAMPS, CRUSHERS AND TUBE MILLS—SLIMES PLANT TO BE DOUBLED—ECONOMICAL AND CAREFULLY CONSIDERED SCHEME.

The Geduld Proprietary Company this week made an official announcement that the board of directors had decided on an increase of the reduction plant from a nominal capacity of 40,000 to 65,000 tons per month. It was also stated that the necessary work of extension would be undertaken immediately and pushed forward with the utmost speed. In view of the interest manifested in the form the additional crushing capacity is to take, we have gleaned the following official particulars of the proposed plant, which is claimed to be, in the circumstances, the most suitable and economical for the purpose.

The present ore reduction plant of the Geduld Proprietary Mines has a nominal capacity of 40,000 tons per month, but in practice nearly 45,000 tons per month are treated. The plant consists of 100 heavy stamps and eight tube mills. In 1920 the total tonnage crushed was 526,700 tons, and in 1921 537,800 tons. It has now been decided to increase the reduction plant to 65,000 tons per month, and in view of the adoption of all sliming at the New State Mines plant and the radical alterations at the Springs Mines plant, considerable interest is taken in the method in which the additional treatment capacity at the Geduld is to be achieved. Of course, the fact that Geduld is an equipped and producing mine has an important bearing on the question of increasing the reduction plant, and the scheme ultimately resolved upon after full consideration of capital expenditure and applicability to the existing plant, naturally took these factors into consideration.



Geduld No. 7 Shaft.

The New Plant.

Briefly, the additional plant will consist of forty heavy stamps of the most modern type; five tube mills of the new standard size, viz., 6 ft. 6 in. by 20 ft., as adopted at the New State Areas; and two new crushers of the same type (Gates) as already installed on the property. The effect of these additions will be that all the new product will be slimes, that is, upwards of 70 per cent. of slimes is expected. The present product of 650 tons sands and 850 slimes will be raised to 1,550 slimes and 650 sands, the slimes plant being thus practically doubled. Both on the score of capital expenditure involved and suitability to the existing plant, these additions are said fully to justify themselves.

Finance of the Company.

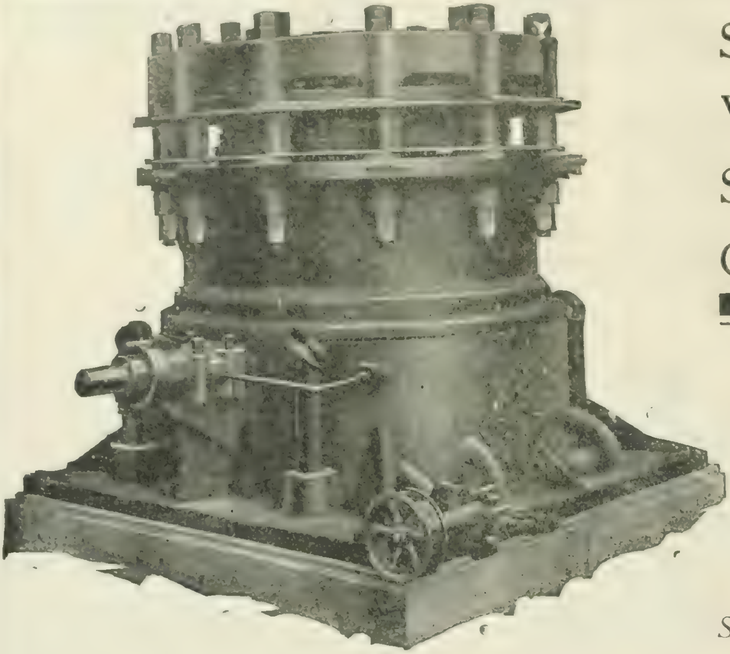
Owing to the taking up of the shares under option the capital of the company has been considerably increased, and the new plant will be entirely paid for out of the new capital. In the period from September 16 last to December 31 when they expired, options over 151,796 shares were exercised at 40s. The issued capital of the company has therefore been increased by £152,796 to £1,328,052. Altogether, 178,052 options were exercised out of a total issue of 180,000 shares.

The ore reserves at December 31, 1921, were 3,545,000 tons going 8·1 dwts. It may be recalled that costs last year showed a welcome decline, but profits were somewhat lower owing to the reduced selling price of gold. They more than covered the dividend paid, however, with the result that the unappropriated credit balance expanded from £55,000 to £129,000. In the year developments were most satisfactory, especially in the No. 7 level east, which was in good grade ore throughout. The benefit of the rise in the grade of the past two years was not reaped last year, as the workings were not connected up until the latter part, but this year the mill should be running on ore of the average grade, which will raise revenue materially. Costs were much lower in the second half of the year than in the first. With the reduction plant increase, profits would expand to even a greater extent, owing to reduction in ratio of overhead charges, and the prospects were therefore never brighter than they are to-day.

British Empire Exhibition.

Active work has already begun in preparation for the great British Empire Exhibition to be held near London during 1924. The most up-to-date machinery and methods are being employed in the constructional work for this huge display of industrial and artistic achievements. In the excavation work for the sports arena the contractors are using a gigantic machine which can excavate 200 cubic yards of material per hour. The plant is steam-driven and mounted on caterpillars, and it carries a 60 feet boom with a bucket of two cubic yards capacity. The complete operation of excavating and deliverinng an overflowing bucket load is about 35 seconds. In connection with the exhibition arrangements are being made for an international conference on the subject of "Power." British engineering groups are inviting experts from overseas to discuss every phase of this important question.

SWISS CARBIDE
For every Purpose. Excellent Quality.
B.A. and W.A. Standards.
Delivery in lots of 10 tons and more direct from Works to c.i.f. South African Ports.
Packing in 50 Ko./100 Ko. Strong Iron Drums.
Ask for Quotations
Electro Chemical Works Gurtnellen
GURTNELLEN (SWITZERLAND).
Cable Address: "Carbid, Gurtnellen."
A.B.C Code 5th Edition Old-established Swiss Makers

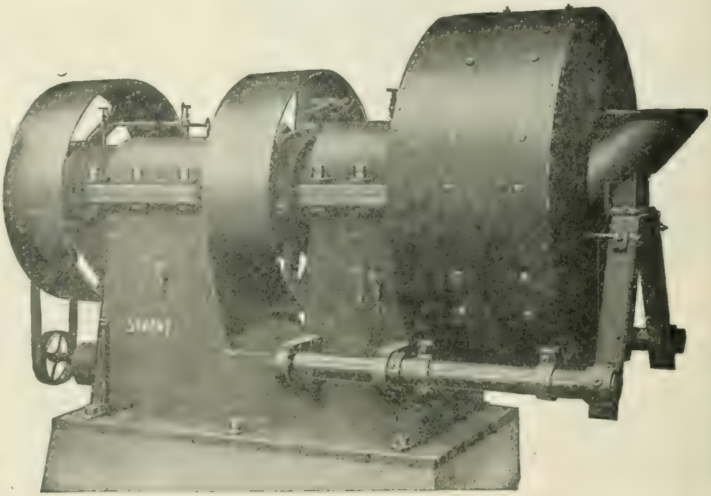


SYMONS
VERTICAL
SHAFT DISC
CRUSHER

SIZE : 48 Inches

Sandycroft, L^TD.
LONDON & CHESTER
(INCORPORATED IN GREAT BRITAIN.)

SYMONS
HORIZONTAL
SHAFT DISC
CRUSHER



SIZES
18″ 24″ 36″ & 48

P.O. BOX 4453. Tele. "SANCROFT" PHONE 2794. JOHANNESBURG.

OUTSIDE DISTRICTS

Locking Up Lydenburg.

THE FENCE AROUND THE PILGRIMS REST GOLD FIELDS—SOME IMPORTANT DEVELOPMENTS—AN AREA OF GREAT POSSIBILITIES—PRESENT OUTPUT OVER 10,000 OUNCES PER MONTH—WHERE BIG EXPANSION COULD BE ACHIEVED—THE T.C.L. AND T.G.M.E.'S HOLDINGS—THE GOVERNMENT AND THE LAW—THE DOG IN THE MANGER POLICY.

Next to the Witwatersrand, the most important gold producing area in the Union of South Africa is that known as the Pilgrims Rest field, which embraces the Lydenburg-Sabie-Pilgrims Rest-Mac Mac and Spitzkop workings.

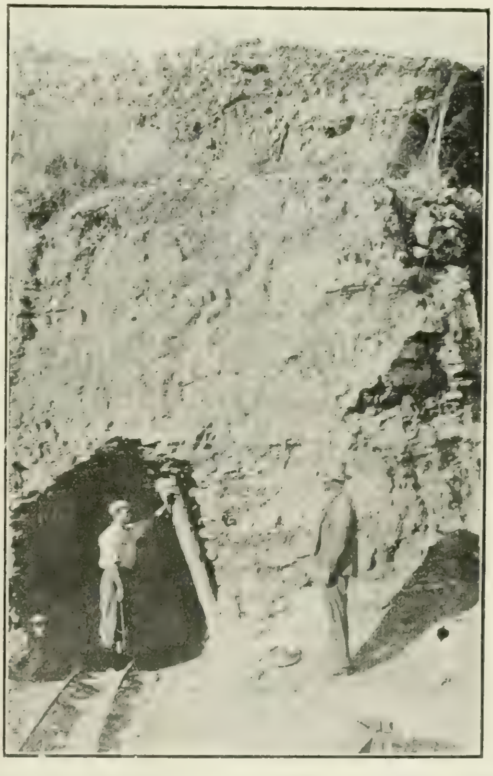
Output of Over Ten Thousand Ounces Per Month.

The output of this area, according to the Mines Department statistics for the month of March, 1922, was 10,396 oz., contributed to by 13 " large " mines, 8 small mines, 5 alluvial diggers, and 1 tailings and old reduction site proposition. In all, 326 white men, including 46 small mine workers and 16 alluvial diggers, were at work on these gold fields, and the total number of coloured employees was 6,221.

An Old and Extensive Field.

Mining has been carried on in this district since about 1872, and began, as in some other gold fields, with alluvial digging. In the early 'seventies considerable activity was displayed in the alluvial fields along Pilgrims Creek, round Mac Mac, and Spitzkop, and, especially over the last-named area, abundant evidence of this is still visible. It has been estimated that during the early stages in the history of these fields quite 2,000 diggers were engaged in alluvial workings, which yielded some £500,000 worth of gold. During the later 'seventies, gold-bearing reefs were discovered and worked, with the result that alluvial occurrences now occupy quite a subordinate position, almost the entire output being derived from the numerous quartz reefs since discovered.

For some years now, the mining industry at Pilgrims Rest has become firmly established as one of the chief, if not the most important, economic factors in the Eastern Transvaal. Glynn's Lydenburg and the workings controlled by the Transvaal Gold Mining Estates have had the main share in this result, and it may truly be said that these two companies, in conjunction with the T.C.L., dominate the whole field. They are, in fact, the De Beers of the Eastern Transvaal. " In spite of a good deal of prospecting in various directions, much remains to be done, and the recent discoveries of the ' sandstone reef ' at Sabie, of Thelma and Glynn's reefs on Vaalhoek, and of the various reefs in the older granite below the ' Berg ' indicate that the economic possibilities of the district, even after some thirty-five years of mining, are not yet exhausted, while the area north-west of Vaalhoek, towards the Oliphants River and beyond it, is practically unknown, although it is made up of the same succession of shale, dolomite, and sandstones as are found at Pilgrims Rest and Sabie," wrote Mr. A. L. Hall in his valuable Geological Survey Memoir of 12 years ago.



Theta Reef Horizon, East Clewer Mine, near Pilgrims Rest. (From the Geological Survey Memoir No. 5.)

The country here referred to as the Pilgrims Rest Gold Mining District includes the immediate neighbourhood of Pilgrims Rest and the numerous workings on Graskop and [illegible] (Mac Mac), as well as the mining centres of Sabie and Spitzkop; while to the north it includes Frankfort, the old workings on Lisbon and Berlyn, the recent discoveries on Vaalhoek, and the less important workings round Belvedere, Ledophini, and Elandsfontein. Towards the west are included the various reefs associated with the shales and quartzites of Sterkspruit, Doornhoek, and Nooitgedacht. The whole of this area is frequently described as the "Lydenburg Goldfields," but this term is a misnomer, excepting for the fact that all the mines alluded to are situated in the Lydenburg district, for the economic importance of such few mines as are found near Lydenburg is almost negligible compared with the output from Pilgrims Rest and Sabie.

Important Developments.

Of recent months there have been several highly encouraging developments in this locality. The Glynn's Lydenburg Company, for instance, are understood to have obtained some excellent developments in the Werf Mynpacht section, good prospecting results have been obtained in the "Chi" section of the Transvaal Gold Mining Estates, and a number of small mines have been obtaining satisfactory recoveries and highly payable development values.

The " Grouse " of the District.

But the district has a " grouse," and a big " grouse " too, at the present moment. Many small mine workers, diggers and prospectors complain that the greater portion of this very extensive field is locked up, and they contend that if there was not a ring fence around hundreds of square miles of the mineralised area many new small mines would be opened up and profitable employment would be offered for a large additional number of Europeans and that prospectors and small mine workers from various parts of the country would be attracted to a gold field which possesses many natural facilities for economic working and wherein capital outlay need not be very large.

A Long Standing Grievance.

It is no new grouse this. As a matter of fact, it was heard years ago, long even before the railway was built to solve the more pressing transportation problems of the district. The critics of the big companies contend that the large vested interests did little towards helping the Government in the construction of the railway and they argue that the action of these big concerns in locking up the district and the inaction of the Government in not proclaiming several farms on which gold-bearing reefs are known to exist is inimical to the best interests of the Pilgrims Rest district, and in fact to the whole of the country.

The Dolomites and the Key to the District.

In order to appreciate the facts upon which these complaints are based it is first necessary to realise that the richest reefs in the field occur in the dolomite and Black Reef Series and that whilst vertical quartz reefs are found in the older granites and associated schists he who holds the line of the dolomites with their flat lying profitable reefs has in his hand the key of the district and commands its destinies.

Forty Miles of Reefs.

Consult Hall's well-known map and you will see the light blue of the dolomites and the dark blue of the Black Reef Series stretching northwards from Onverwacht up to where the Ohrigstad River joins the Blyde. For forty miles or more there is an auriferous area which at several points is known to contain profitable auriferous veins which are being worked with success by the T.G.M.E., the Glynn's Lydenburg Company, and at several points by small mine owners. Here and there are farms which have been proclaimed, and it is a significant fact that on practically every area which has been thrown open to the public small mine workers and alluvial diggers have profitably established themselves. Thus on Graskop three little mines are working and on the farm London one or two small shows are securing fair returns.

The Barbed Wire Fence.

But for the greater part of this stretch of auriferous country which is roughly 40 miles long by 8 to 12 miles broad the farms are held by companies or private individuals, prospecting is " verboten," a fence barbed with all kinds of formidable obstacles surrounds an area which might well become a second and small edition of the gold belts of Rhodesia, where scores of small mines form the backbone of the country. If one inquires into the ownership of the farms one finds that the greater part of this tract of country is held by the Transvaal Gold Mining Estates, Ltd., the Transvaal Consolidated Land and Exploration Company, Glynn's Lydenburg, certain private owners, including Sir Abe Bailey, Messrs. Glynn, Bourke and Hollins, and by one or two semi-derelict London concerns.

T.C.L. and T.G.M.E.'s Vast Holdings.

By far and away the largest owners are, however, the two first named companies. The T.G.M.E. Company holds in freehold (according to the latest directors' report) 29 farms or portions of farms, ranging in area from 3,500 up to 10,857 acres each, and has the mineral rights of four other farms, concessions in perpetuity, and large numbers of claims, water rights and machine stands. The T.C.L. Company has full rights over 2,256,611 acres, surface rights only in respect of 213,818 acres, and mineral rights only over 1,330,539 acres. A considerable portion of this company's vast land interest is in the Pilgrims Rest-Lydenburg area, where the T.C.L. has an interest in the freehold of the farm Rietfontein. Between them these concerns have control of many square miles of the Pilgrims Rest mineral area, and it is contended that if a more progressive policy was adopted by these and other companies and individuals, or if the Government, in terms of the Precious and Base Metals Act, would proclaim farms on the auriferous horizons that there would be a very large expansion of activity in the area under consideration.

The Law of the Land.

It is pointed out that on one of the farms locked up by the dog-in-the-manger policy, a previous worker produced over £20,000 of gold, and it is known and in fact conclusively proved that gold in payable quantities occurs on various other properties. Moreover, it is claimed that Section 123 of the Precious and Base Metals Act expressly says: " Whenever it shall appear expedient in the public interest, the Governor-General may by Proclamation in the *Government Gazette* declare any land adjoining, enclosed by, or situate in the neighbourhood of proclaimed land, to be portion of a proclaimed field."

In the Act of 1908 it is stated that the right to mine for precious metals belongs to the State. It is one of the chief duties of the public servants of the Mines Department to give the public the opportunity to exercise that right, and the Act of 1908 gives them the legal machinery to do so, the rights of the landowner being protected or compensated for in various ways.

Hopes were raised some time ago that a farm very favourably situated and on which payable gold had been produced would be proclaimed and that a definite policy of proclaiming farms at reasonable intervals would be instituted.

But it has, so we are informed, been alleged by the farm owners that the beacons of this particular property are disputed and the proclamation is indefinitely hung up pending a fresh survey. Meanwhile thousands of unemployed are tramping the land looking for work, and one cannot therefore be surprised that public opinion is strongly inclining to the view that if a more active policy is not followed by the owners of these thousands of acres of gold-bearing ground in the second auriferous field of the Transvaal that the Government should be compelled to take cognisance of the Acts quoted above and to break down the fence which closes a most promising mineral field to the public.

Heidelberg Reefs.

The Heidelberg Reefs controversy seems to have been revived. In our last issue we quoted certain extracts from a letter by Mr. John Moffat in the *Heidelberg News*, and from the editorials which recently have appeared in that paper on the subject. In the latest issue of the *News*, Mr. Moffat returns to his charge, and in the course of a lengthy letter, states: "It would be as well to point out to you and other parties interested, that the leading geologists whom I mentioned in my previous letter have correctly determined the so-called Molyneux Reef as the same as the Nigel Reef, and, further, that these formations are the local representatives of the true Van Ryn Reef or Main Reef Leader. This has been now further confirmed by the cable sent to the Town Council by the Houtpoort, Ltd., indicating the reports supposed to have been made recently by Dr. Hatch and Mr. H. S. Denny. It may interest you and others to know that this particular feature of geology as to the Main Reef Horizon in the Heidelberg District was shown on Dr. Hatch's map which was published nearly thirty years ago, and it is a well-known fact that Mr. H. S. Denny has always agreed with the conclusions of all the recognised geologists as regards the horizon of the Main Reef Series in the district. Why the confirmation by the Government is wanted again at this particular juncture is not so difficult to understand. However, you will find that the Government have already confirmed this theory, as in the much advertised cables despatched in March and April, 1920, the Mines Department distinctly state that the reefs which outcrop on Tulipvale, Klippoortje, Townlands of Heidelberg, Boschfontein ,etc., are part of the Kimberley Series, and everyone acquainted with Rand geology knows that the Kimberley Series overlies the Main Reef Series. In paragraph 3 of the first cable the Department stated that ' the Main, Van Ryn, and Nigel Reefs are parts of one and the same reef series.' In the second cable sent on 7th April, 1920, the Department further stated that the Nigel Horizon underlies the farms mentioned, so why you should insist upon the Town Council appealing again to the Government for confirmation of this theory, as requested by Houtpoort, Limited, is difficult to understand. Surely the Council or Vigilance Committee would look very foolish if they approached the Government to confirm the Hatch and Denny report when, as I have shown you, the Mines Department confirmed this theory two years ago."

The *Heidelberg News* contains an editorial reply to this letter. The *News* concludes by stating: "There have been three setbacks to the district's advancement—one was the unspeakable error of leading the investing public to believe that the Molyneux Reef was a payable proposition, with disastrous consequences; another was the disappearance of the Coronation Reef at 200 ft.: and the third was the 'bombshell cablegram.' "

* * *

BARBERTON GOLD STATISTICS

The following particulars of mining for the month of March, 1922, are supplied by Mr. L. G. Deglon, Secretary to the Barberton District Mine Owners and Managers' Association:—Number of mines producing, 8; number of stamps working, 105; tube mills, 3; tons of ore treated, 7,799: fine gold recovered, 3,261·156 oz.; value (at £4·24773), £13,853; small mines and miscellaneous, fine gold, 245·890 oz., value £1,044; total gold output, 3,507·046 fine oz., value £14,897; labour—whites 155, coloured 2,183; Chamber of Mines' estimated value per fine oz., £4·700. Claims held for month ended 31st March, 1922:—Prospecting permits, 32; prospecting claims 2,048; diggers' claims, 246; base metal claims, 9,286; total claims, 11,580

The Busy Man's Page.

WHAT TO READ IN THE TECHNICAL PRESS.

Mining and Metallurgy.

The Prospector and the Grubstake.—Canadian Mining Journal, April 7.

The Nickel Industry.—Canadian Mining Journal, April 7

Iron and Steel.

Symposium on Electric Cast Iron.—Iron and Steel of Canada, April.

Pig Iron and Ferro-Alloys.—Iron and Steel of Canada, April.

Stainless Steel in Engineering.—Iron and Steel of Canada, April.

Coal.

Spontaneous Combustion of Coal in Mines.—Colliery Guardian, April 21.

World's Coal Production, 1921.—*Colliery Guardian*, April, 1921.

Powdered Coal.—Colliery Guardian, April, 1921.

A Symposium on Low Temperature Carbonization of Coal.—Colliery Guardian, April, 21.

Electricity.

New Electrically-Driven Coal Cutter.—Colliery Guardian, April, 1921.

Electrification of S.A.R. (several articles).—*S.A.R. Railway Magazine*, May.

Economics.

The Gold Position.—Australian Chemical Engineering and Mining Review.—April 5.

OSBORN'S

BEST
TOUGHENED CAST STEEL
WHEELS AND AXLES,
LOOSE TRUCK WHEELS,
"U" PULLEYS,
"DALY" PATENT TAPPETS,
AND
CASTINGS OF ALL DESCRIPTIONS.

SAMUEL OSBORN
(S.A.), LIMITED.
P.O. Box 3162 'Phone 4673
JOHANNESBURG.
WORKS: CLYDE STEEL WORKS, SHEFFIELD

To Lower your Operating Costs:

A Lubrication Audit

Business to-day protects itself against waste and inefficient methods——by audit.

An audit gives an exact picture of present conditions, and points the way to improvement.

We would like to call to your attention the possibilities of a Lubrication Audit in your plant.

See details in column.

Only a Lubrication Audit can give you full information, and open the way to new economies which will soon be reflected in lower operating costs.

Present industrial conditions make it urgent that you take this step toward improved results at once. Ask our nearest branch today about the Lubrication Audit.

GARGOYLE

Lubricants

A grade for each type of service

THE LUBRICATION AUDIT

Explained Step by Step (in condensed outline)

INSPECTION:—A thoroughly experienced Vacum Oil Company of S. A. Limited, representative in co-operation with your plant engineer or superintendent makes a careful survey and record of your mechanical equipment and operating conditions.

RECOMMENDATIONS:—We later specify in a written report, the correct oil and the correct application of the oil for the efficient and economical operation of each engine and machine. This report is based on:

(1). The inspection of the machines in your plant.
(2). Your operating conditions.
(3). Our 25 years of lubricating experience with all types of mechanical equipment under all kinds of operating conditions.
(4). The outstanding experience of the Vacuum Oil Company in manufacturing oils for every lubricating need.

CHECKING:—If, following our recommendations in this audit, you instal our oils, periodical calls will be made to check up the continuance of the desired results.
For the above Free Service address our nearest branch office.

BRANCH OFFICES:

Cape Town
Kimberley
Port Elizabeth
Johannesburg
Bloemfontein
East London
Pretoria
Mossel Bay
Durban
Lourenco Marques.

VACUUM OIL COMPANY OF SOUTH AFRICA, LTD.

STANDARD BANK

OF SOUTH AFRICA,
LIMITED.

(With which is incorporated the African Banking Corporation, Ltd.)

Established 1862

Authorised Capital - - -	**£10,000,000**
Subscribed Capital - - - -	**£8,916,660**
Paid-up Capital - - - - -	**£2,229,165**
Reserve Fund - - - - -	**£2,893,335**

GENERAL BANKING BUSINESS transacted at all Branches and Agencies; DEPOSIT and CURRENT ACCOUNTS opened; PURCHASE and SALE of INVESTMENT SECURITIES effected, etc.

SAVINGS BANK ACCOUNTS opened on terms, particulars of which may be obtained on application.

The BANK is in close touch with TRADE and INDUSTRIAL CONDITIONS, both local and overseas, and special attention is given to COMMERCIAL ENQUIRIES from customers.

EXECUTOR and TRUSTEE business undertaken.

Over 380 Branches and Agencies in Africa.

Agents and Correspondents throughout the World.

USE

"PORPOISE"

BRAND

ANTIFRICTION GREASE

Used for years by the majority of Mines all over South Africa.

Manufactured by

South African Lubricants & Chemical Works, Ltd.,

DURBAN & JOHANNESBURG.

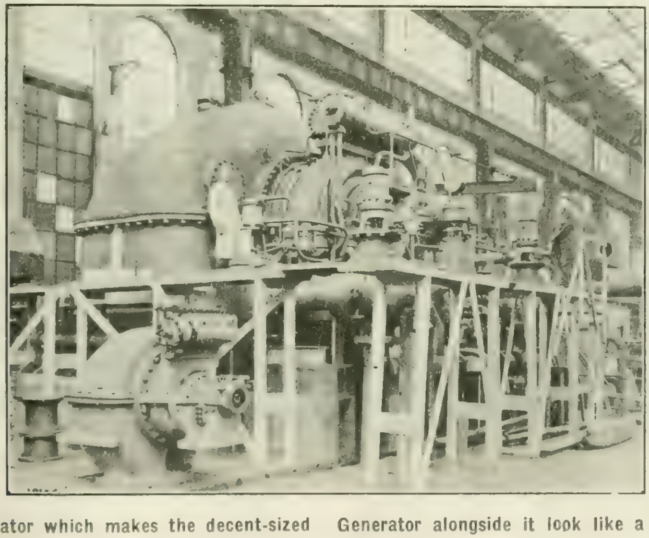
Phone 1618, *Johannesburg Branch Office.*

ENGINEERING SECTION.

Big Turbo-Generator.

LARGEST IN GREAT BRITAIN—OUTPUT OF 30,000 KILOWATS—SOME INTERESTING DETAILS.

The largest turbo-generator in Great Britain has been recently installed in the new power station of the Rotherham Corporation. This plant, which was designed and built by the British Thomson-Houston Co., Ltd., at Rugby, has a maximum continuous output of 30,000 kw. at a speed of 1,500 r.p.m. The total weight of the turbo-generator is about 300 (British) tons and the floor space occupied is approximately 47 ft. by 20 ft. 6 in. Fig. 1 shows the steam end only erected on the test bed at the Rugby Works, and fig. 2 shows the complete unit installed at Rotherham. In fig. 1 it is interesting to note the relative sizes of the 30,000 kw. machine and the 750 kw. turbine in the foreground; the latter weighs 6-tons, while the steam end of the Rotherham machine weighs 145-tons.



The Big Generator which makes the decent-sized Generator alongside it look like a "Pup."

Owing to the limitations of the British railway loading gauge, it was necessary to remove several of the largest wheels before despatching the steam rotor from the works, and to reassemble them on site. For similar reasons it was necessary to cast the generator stator frame in halves and build up the stator on site. Transport difficulties did not affect the generator rotor, which was completed at the works, thus enabling running balance, overspeed and insulation tests to be carried out before despatch to Rotherham. The turbine is of the Curtis Impulse type, with 14 stages, the first stage wheel having two rows of buckets, and the remaining 13 wheels one row of buckets each; the largest wheel is nearly 12 ft. diameter. The steam consumption is approximately 312,000 lb. per hour, the actual figures being 11·4 lb. per kw. hour at the maximum load ,and 11·1 lb. per kw. hour at the most economical load of 25,000 kw.; these figures relate to the guaranteed steam conditions of 200 lb. per square inch gauge pressure, 200 degs. F. superheat, and an exhaust of 28½ in. vacuum.

Steam is admitted to the turbine through duplicate stop valves which are arranged to act as emergency valves to shut off steam if the speed of the turbine exceeds 10 per cent. above the normal. The control valves are operated by oil pressure obtained from the main oil pump, which is driven by worm-gearing at the end of the turbine shaft. The oil pump also supplies the main lubricating system for the turbine and alternator bearings, each bearing being fitted with a thermometer and an oil return box in which the flow of oil can be seen. The lubricating system includes three oil coolers in parallel, any one of which can be disconnected for cleaning, the oil also passes through a multiple strainer of which any section can be removed and cleaned whilst the turbine is in operation. The speed governor is of the centrifugal type, actuating a pilot valve which regulates the admission of oil to the valve control gear, the speed variation between full load and no load being kept within 3 per cent. A multi-collar thrust bearing is attached to the steam end in order to locate correctly the axial position of the wheels; this thrust-bearing is so designed that the axial clearances can be adjusted while the turbine is running.

The high pressure end of the turbine casing, together with all steam valves and other parts exposed to high pressure steam, are made of cast steel. The exhaust casing, which forms the largest portion of the turbine, has an exhaust opening 10 ft. x 8 ft., connected by means of a large diameter pipe to separate surface condensers in the basement. The electrical end is designed for a maximum continuous output of 40,000 kva., 3-phase, 50-cycles, 6,600 volts, 75 per cent. power factor. It comprises a direct coupled, totally enclosed, air-cooled alternator, and a direct coupled exciter. The stator is of the bar wound type, each conductor consisting of a large number of laminations individually insulated, the complete conductor being insulated with mica. Before being put into service the completely wound stator was subjected to a test of 14,200-volts for one minute between phases and to earth.

The rotor is of the cylindrical non-salient pole type, with distributed windings, the exciting winding being of copper strip insulated with mica. The slot keys are of hard copper and are connected by massive rings and plates so as to constitute a squirrel cage winding. The squirrel cage winding permits of a certain amount of unbalanced single-phase load, without undesirable heating effects. Current is taken by 16 brushes equally spaced round each collector ring, the contact density being sufficiently low to ensure satisfactory operation, even if some of the brushes are not making good contact. Ventilating air is drawn into the alternator from ducts in the foundation by a fan at each end of the rotor, passing through radial ducts in the stator and rotor into the outer frame of the machine. This system of radial ducts in the magnetic structure ensures uniform cooling, and as the intake is through an air-washing plant, the ventilation is very efficient.

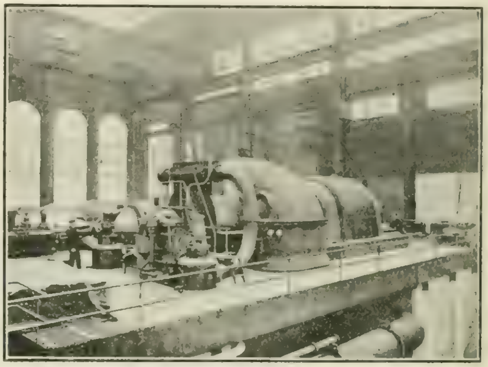
The exciter is a 4-pole shunt wound self-exciting machine with commutating poles and is connected direct to the alternator sector without a series rheostat, the control being effected by means of a rheostat in the shunt field circuit. The bearings of both alternator and exciter are lubricated under pressure from the main turbine oil supply, and efficient means are provided to prevent the escape of oil along the shaft into the machine. No external reactors are necessary in the generator circuit as the alternator is designed with high internal reactance so that, in the event of an accidental short-circuit occurring, the maximum momentary current is limited to a safe value. Inherent voltage regulation is coarse, but this is in no way detrimental as the generator operates normally with a Tirrill Regulator, which keeps the voltage variation within 2 per cent. above or below the normal voltage at any load. It is not expected that the load will vary enough to cause appreciable voltage even without the Tirrill Regulator in operation.

TRANSPORT IN THE CONGO STATE.

Speaking a short time ago on the general question of transportation in the Congo State, Monsieur Louis Franck, the Belgian Colonial Minister, referred to the Bas Congo-Katanga Railway, which will connect the mining system with the centre of the Colony and the Atlantic ports, and said that a decree had been issued which marked the beginning of work on the new line. A mission sent to investigate on the spot had found at Ilebo, 30 kiloms. south of the confluence of the Kasai and the Sankoro, a port at which 800 m. of wharfage which could be approachable all the year round by vessels of 500 tons, could be built. In Katanga, he explained, the railway will start from Boukama, the point of contact of the Katanga and Great Lakes lines. Work is to be commenced at both ends of the line, and it is hoped that the railway will be completed in six years.

Monsieur Franck stated, further, that the Matadi-Léo line was to be modified and improved. Two sections, of a total length of 270 kiloms., would be constructed to the north and south of Thysville. The cost was, he said, estimated at about 10,000,000, and the adjudication for the work would be held at the end of April, subject to the approval of the authorities concerned. A mission was also studying the three routes possible for joining up the gold region of Kilo with the centre of the colony, since the exploitation of the mines at Kilo was becoming more and more extensive, and that called for the creation in that region of an industrial centre. In connection with transport by water, the question is being studied of constructing wooden barges on the spot instead of importing expensive steel barges from Europe. It has been found that four species of Congo timber are suitable for the purpose of constructing vessels up to 250 tons, and it is asserted that by introducing changes in the type of barge and the system of towing one-third of the present expenses might be saved.

The Comptoir des Aciéries Belges have lost no time in raising a protest against the suggestion recently made in Belgium that Germany should be required to deliver to Belgium on reparation account 300,000 tons of rails and sleepers to be delivered in one or two years and be stocked at Antwerp. These rails and sleepers would be invoiced by Belgium to the Congo Colony, who would use them on their railways, the building of which would occupy from six to eight years at least. The proposal—says the Comptoir—if acted upon would offer few advantages to Belgium and the Congo, and would spell disaster for the Belgian steelworks. Moreover, the Congo Colony would not realise any saving by having to pay now for rails that will not be wanted for some years. The 300,000 tons of rails would cost now about 120,000,000 fcs. (£4,800,000) at par. The railway line itself, which would be from 3,000 to 3,600 km. (say, 1,800 to 2,150 miles) long, would involve an expenditure of some 480,000,000 francs (£19,200,000) at the least. The Comptoir next wants to know why the steel works should be singled out as victims, as, with the exception of boats for the Congo, there was no mention of accepting as indemnity anything else from Germany for that Colony.


The type H146 Turbo Alternator, Rotherham Corporation Power Station.

PORT ELIZABETH'S NEW ELECTRIC POWER PLANT.

The following tenders have been accepted by the City Council, subject to the approval of the Administrator:—

Turbo alternator (Messrs. Sykes & Co.), £16,290; circulating piping (Messrs. Sykes & Co.), £1,429; boilers and hoppers (Messrs. Reunert & Lenz), £26,108; steam pipes (Messrs. Reunert & Lenz), £2,111; overhead crane (Messrs. Sykes & Co.), £1,435; E.H.T. switchgear (British General Electric Co.), £885; E.H.T. cables (Henley's Telegraph Works), £2,355 10s.; two 500 k.w. converters (Messrs. Bruce Peebles & Co.), £5,050; bunkers and belt conveyers, circulating water intake and delivery stand pipe and base and railway culverts (Messrs. Murray & Stewart), £10,313.

Electrification of the South African Railways.

FACTS CONCERNING THE GLENCOE-MARITZBURG SECTION, THE FIRST TO BE ELECTRIFIED.

From the Electrification Number of the "South African Railways and Harbours Magazine," which contains several valuable articles by experts, we take the following account of the Glencoe-Maritzburg section of the line by Mr. R. C. Wallace, the Chief Civil Engineer of the S.A.R. This section has acquired a melancholy interest in the last few days, by reason of the wrecking of a goods train near Glencoe.

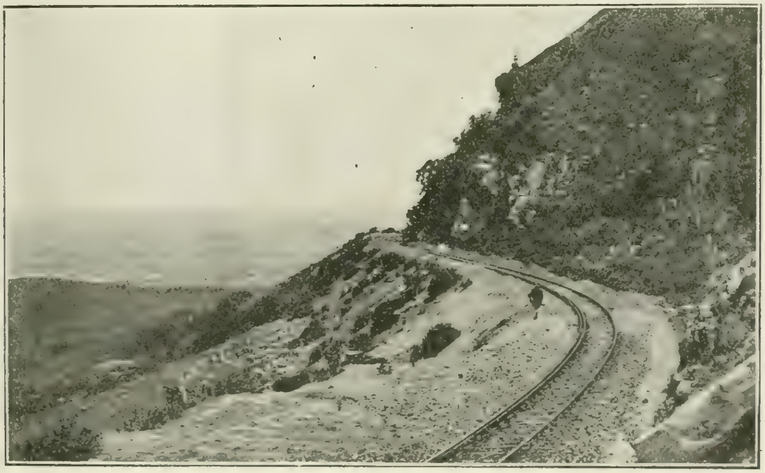
From Maritzburg to Glencoe is almost exactly 100 miles as the crow flies, but the distance between the same points by the present railway route is 170 miles. The country generally is what is known as Thorn Veld, which, according to Dr. Pole Evans, is "characterised by the presence of tall arborescent aloes and open bush of *Acacia Karoo*." The surface is broken and difficult for the lower part of the route, but becomes flatter and easier between Umbulwana and Waschbank, from which latter point to Glencoe the railway line climbs the flanks of the Biggarsberg range on steep grades.

Maritzburg is 2,218 feet above sea-level and Glencoe 4,302, so that the net difference of level is 2,084 feet over the total distance. After leaving Maritzburg the improved route of railway is on a continuous rising gradient, generally of the maximum of 1 in 50, up to Hilton Road from whence it runs through a wide stretch of magnificent uplands. The highest point reached on the new route is at Stockton tunnel, at an elevation of 4,952 feet, as compared with 5,152 feet of the Highlands summit on the old route. The line is then mainly on a falling gradient as far as Estcourt. From there the route is more switch-back in character, but gradually falls till Colenso is reached on the banks of the Tugela river at 3,156 feet, thence rising to Ladysmith at 3,281 feet, and to Glencoe at 4,302 feet as stated. In consequence of the loss of level by the rise and fall of the railway line over intermediate watersheds the steepest actual grade on the line is 1 in 30, regraded, however, on sections already improved, to 1 in 65 Down (*i.e.*, going north) and 1 in 50 Up (*i.e.*, coastwards), as equivalent ruling grades.

The line runs through a district of the Union of which the population is fairly dense. Maritzburg has 30,500 inhabitants, of whom one-half are whites; Ladysmith has a population of 3,000 whites, and Estcourt 1,000. The average population density of the district served by the line varies from 18 to 90 to the square mile, part therefore being greater than the average population density of the United States of America, which is 31. The average density of the population of the Union of South Africa is 12·63 to the square mile for all races, and 2·7 for Europeans alone. So far as the human element is concerned, therefore, the district offers a good field for development.

With such great natural advantages the district traversed by the railway from Maritzburg to Glencoe affords great opportunities for development by electrification. The Umsindusi river flows past the town of Maritzburg and supplies it with water which is withdrawn higher up the valley and led to the service pipes by gravitation. A water borne sewerage system has been in operation for some time but is now being extended.

Electricity for propelling the municipal trams and providing power and light is supplied by the town's own steam power station, but at present this is taxed to its utmost capacity and extensions are urgently needed, so that the supply of electricity by the Government would be likely to afford considerable relief. There are many private industrial ventures in Maritzburg and the neighbourhood, such as boot and clothing factories, cold storage plant, and creameries, which would also probably take advantage of any new source of electric power for development.



Kettlefontein Corner, near Pietermaritzburg. From the *S.A.R. and H. Magazine.*

Maritzburg is an important railway centre, being the meeting point of the main line between Durban and Johannesburg, with a branch to Krantzkop via Greytown (124 miles) and the Natal-Cape line to Franklin (140 miles).

The railway starts to climb the hills immediately on leaving the station, and a new second track on a 1 in 50 gradient has recently been constructed as far as Boughton. Here the line divides into two routes, the old main line with a 1 in 30 grade passing by way of Blackridge, Sweetwaters and Winterskloof to Hilton Road; and the new line (a deviation on a gradient of 1 in 50, constructed some years ago), which pierces the summit immediately below Hilton Road station by means of a tunnel 907 yards long.

The construction of his deviation entailed many difficulties which were aggravated by the land-slides brought caused by the floods in 1917, and an examination of this portion of the line affords many interesting examples of the different methods adopted by the railway engineers in dealing with the varying conditions arising as a consequence of heavy rainfall.

[illegible] again at Cedara, [illegible] deviation works are now in progress between this place and Nottingham Road by which, as elsewhere, the heavy grades of the old original line will be replaced by 1 in 50 up grades, 1 in 65 down grades, and easier curves.

From Cedara, at which place there is a flourishing Government agricultural college, the line falls to Dargle Road, thence rises to Nottingham Road (4,807 feet) and again falls with several minor fluctuations of level to the banks of the Tugela river at Colenso (3,156 feet), the highest point of the section, as already stated, being at Stockton tunnel.

This part of the country is fertile and healthy. It is well supplied with perennial rivers, but unfortunately they are too small in volume to give sufficient power for the railway without very large storage works, though some of them might be utilised for small power plants and for irrigation purposes. The district has many small industries capable of development.

Merrivale, at 92 miles, is a depôt for banking engines and the junction for a small branch railway of 2½ miles to the village of Howick. This village is situated just above the big falls of the Umgeni river (the Howick falls), where the river after flowing for some distance through a level valley plunges over a rock ledge 364 feet high. A rubber factory has recently been established at the falls for the purpose of exploiting power from the river, part of which has been diverted by a tunnel into the valley below to a point where the stream takes a right-angled bend. Turbines are placed on the bank and the water is led to them through steel pipes from the exit of the tunnel to the bottom of the steep slope of the bank.

It is interesting to note in passing that this factory was the first in South Africa to be constructed by means of the "cement gun," which apparatus is used to blow on to a steel mesh supported by timber a concrete mixture which solidifies and forms a light reinforced concrete wall.

Further down the Tugela river, at the Albert falls, it is proposed to establish a paper factory driven by power from the falling water, and utilising as raw material the refuse from the wattle extract mills in the vicinity. At Balgowan (110 miles) there is a boys' school ideally situated. Fruit is plentifully grown on the farms in the neighbourhood.

At Nottingham Road (116 miles) the railway deviation rejoins the main line. Crossing a small summit the line then falls into the Mooi river valley, following the course of that stream to Mooi river station (130 miles). The village served by this station is only a small one, but it stands in a very prosperous farming district, it is the centre of the Natal butter industry, and boasts a large creamery and a bacon factory.

The Railway Administration has an engine turn-round station here, and supplies the village with electric light. Plans for the enlargement of the station and the extension of the sidings have been under consideration for some time, as also for the improvement of the location of the line between Mooi river and Nottingham Road, to permit of the haulage of full loads to Maritzburg, the heaviest present traffic being the coal traffic. The river in this neighbourhood is a broad stream of water and good trout fishing is to be had in the upper reaches, the village of Dargle being a great resort for visitors who practise "the gentle art."

The stretch of country lying between Mooi river and Greytown is of good value for agricultural purposes, and proposals for the construction of a line connecting these two stations have been under consideration.

Colenso, at 185 miles, on the Tugela river, is at the lowest point of the line between Hilton Road and Glencoe, standing as it does at 3,156 feet above sea level. It is a small village consisting chiefly of Indian and Arab stores. The site of the power station for the supply of electricity will probably be in this neighbourhood, the stream of the Tugela providing the large quantity of water needed for condensing the steam from the turbo-alternators, and for the boilers. The configuration of the ground, which is mainly rolling grass land, affords excellent sites for factories. An important town might be built on the site of the present Colenso, and with the cheap power available from the electric power station of the Railway it is possible that this little village, at present so quiet and lifeless, might in the near future develop into a thriving industrial town. The climate here is healthy. Picturesque views of the Drakensberg mountains are to be obtained from Colenso and its neighbourhood.

At Harts Hill (189 miles) there used to be a woollen factory driven by power derived from the Tugela which, at this place, falls over a rock bed in a cataract, but the factory has now been closed for some years. Cheap electricity might result in a revival of this industry.

Ladysmith, at 201 miles, stands at 3,284 feet above the sea, on the banks of the Klip river. It is the biggest town on this portion of the route having a population of 3,000 white inhabitants. It is in the centre of a stock raising and agricultural district, and offers facilities for factories dealing with farm produce and exploiting other industries. The town obtains its water supply from the Klip river. Other sites which would provide facilities for factories and other industrial operations are available near the Sundays and Waschbank rivers.

The Waschbank By-products Factory, for manufacturing chemical and other preparations from coal, is situated on the Waschbank river about three miles from the station, on a branch line to the Burnside coal mine. The factory is awaiting the arrival of machinery before it can be got into full swing.

Glencoe, situated at 243 miles from Durban and 170 miles from Maritzburg, will be for the time being the terminus of the electrified section of the railway. It is approximately placed at the centre of the Natal coal fields, of which the southern limit is Elandslaagte. Three mines are located on this section of line between Elandslaagte and Glencoe, viz., Elandslaagte, Wessels Nek and Burnside collieries, the last near Glencoe. Two of these collieries are served by branch lines, that to Elandslaagte being half a mile long, and that to Burnside (which leases the main line at Waschbank) ten miles long.

Glencoe is the junction for the Vryheid line which continues north through Piet Retief and Ermelo until it joins the main line from Pretoria to Delagoa Bay at Machadodorp. Dundee is the first town on the branch, at six miles from Glencoe. It has a population of over 1,500 whites and depends for its prosperity on the coal mines in the vicinity.

GOVERNMENT EXAMINATIONS.
METAL. RESULTS, 1921. COAL.

Total METAL MANAGERS Certificates

Granted in S.A., 1921	36
Secured by Students of Messrs. LUCAS & WOLFE ..	21
Balance for S.A.	15

7 COAL MANAGERS Certificates obtained in 1921.

Total OVERSEERS Certificates (Metal and Coal)

Granted in S.A., 1921	61
Secured by Students of Messrs. LUCAS & WOLFE ..	25
Balance for S.A.	36

Total SURVEY Certificates

Granted in S.A., 1921	11
Secured by Students of Messrs. LUCAS & WOLFE ..	9
Balance for S.A.	2

C. D. LUCAS & B. E. WOLFE,
MINING ENGINEERS.
OFFICES & LECTURE ROOMS: PERMANENT BUILDINGS.
Postal Address: Box 6391. JOHANNESBURG

Standardisation of Hammer Drills.

From the First Standardisation Bulletin of the American Mining Congress we take the following digest of a paper on the Standardisation of Hammer Drills and Accessories, prepared by Mr George H Gilman He writes:

I do not recommend an attempt being made to restrict the quantity of sizes and types of standard machines to a point that will tend to lower the overall efficiency of the drilling operation, regardless of the fact that from the manufacturer's viewpoint the fewer the number and types of machines the greater will be the volume of each type built, with a consequent reduction in manufacturing costs. However, with a variety of types and sizes of machines to choose from, the individual mine operator will be able to select the minimum number to meet to the best advantage the requirements of the work, and after the selection is made, it will then be necessary for the manufacturer's engineer to regulate the mechanism of the drill in order that it may be adapted to the conditions of ground and air pressure to the best advantage. With this in view, I recommend the standardisation of the following machines:

Details, Capacity and Use of Machines.

(1) A hand-held hammer-drill to weigh 25 to 30 lb., having automatic bit rotation, double-grip handle, drill-steel retainer, automatic lubricator, means for cleaning the drill-hole with air only, and a chuck adapted for $\frac{7}{8}$ in. quarter-octagon hollow drill steel, having $\frac{7}{8}$-in. quarter-octagon collared shank $\frac{3}{4}$ in. long.. Capacity—holes to a maximum depth of 4 ft. with a bottom diameter of $1\frac{1}{4}$ in. Use—scaling walls and hitch cutting from ladder or staging, light pop-holing, etc.

(2) A hand-held hammer-drill to weigh 30 to 40 lb., having automatic bit rotation, double-grip handle, drill-steel retainer, automatic lubrication, water attachment, and chuck adapted for $\frac{7}{8}$-in. quarter-octagon hollow drill-steel having a $\frac{7}{8}$-in. quarter-octagon collared shank $3\frac{1}{4}$ in. long Capacity—holes to a maximum depth of 8 ft. with a bottom diameter of $1\frac{1}{4}$ in. Use—pop-holing in boulders, blast-holes in shrinkage stopes, quarry work, etc.

(3) A hand-held hammer-drill to weigh 30 to 40 lb., having automatic bit rotation, double-grip handle, drill-steel retainer, automatic lubrication, and chuck adapted for collared solid auger drill-steel of cruciform section $1\frac{1}{2}$-in. diameter (spiral to be $3\frac{1}{2}$ turns per foot), having a $\frac{7}{8}$-in. quarter-octagon collared shank $3\frac{1}{4}$ in. long. Capacity—holes to a maximum depth of 9 ft., with a bottom diameter of $1\frac{3}{4}$ in. Use—blast-hole drilling in hematite iron ore, hard pan, gravel, and earth formations.

(4) A hand-held hammer-drill to weigh 55 to 60 lb., having automatic bit rotation, double-grip handle, drill-steel retainer, automatic lubrication, water attachment, and chuck adapted for $\frac{7}{8}$-in. quarter-octagon hollow drill-steel having a quarter-octagon collared shank $3\frac{1}{4}$ in. long. Capacity—holes to maximum depth of 12 ft. with a bottom diameter of $1\frac{1}{4}$ in. Use—blast-hole drilling in shafts, open-pit mining and deep-hole drilling in quarries.

(5) A mounted hammer-drill to weigh 115 to 125 lb., having a shell and feed-screw equipped with a sliding trunnion and adapted for a normal drill-steel change of 24-in. The hammer engine to have automatic drill-bit rotation, drill-steel retainer, automatic lubrication, water attachment, and chuck adapted for $\frac{7}{8}$-in. quarter-octagon hollow drill-steel having a quarter-octagon collared shank $3\frac{1}{4}$ in. long. Capacity—holes to a maximum depth of 12 ft. with a bottom diameter of $1\frac{1}{4}$ in. Use—breast stoping, light drifting, and tripod drilling.

(6) A mounted hammer-drill to weigh 160 to 180 lb., having a shell and feed-screw adapted for a normal steel change of 24 in. The hammer engine to have automatic drill-bit rotation, automatic lubrication, water attachment, and chuck with bayonet lock adapted for $1\frac{1}{4}$-in. round, lugged hollow drill-steel having a round shank 3 13-16 in. long. Capacity—holes to a maximum depth of 20 ft. with a bottom diameter of $1\frac{5}{8}$ in. Use—heavy drifting and tripod work.

(7) A pneumatic feed hammer-drill to weigh 80 to 90 lb., having a pneumatic-feed extension to the hammer engine adapted for a normal steel change of 18 in. The hammer engine to have automatic drill-bit rotation, automatic lubrication, water attachment, and chuck adapted for $\frac{7}{8}$ in. quarter-octagon hollow drill-steel, equipped with a quarter-octagon collared shank $3\frac{1}{4}$ in. long. Capacity—holes to a maximum depth of 12 ft. with a bottom diameter of $1\frac{1}{4}$ in. Use—overhead drilling in stopes and raises.

(8) A pneumatic feed hammer-drill to weigh 60 to 65 lb., having a pneumatic-feed extension to the hammer engine adapted for a normal steel change of 18 in. and adapted to be oscillated by hand. The hammer engine to have automatic lubrication, water attachment, and chuck adapted for $\frac{7}{8}$-in. quarter-octagon hollow drill-steel, equipped with a quarter-octagon collared shank $3\frac{1}{4}$ in. long. Capacity—holes to a maximum depth of 8 ft. with a bottom diameter of $1\frac{1}{4}$ in. Use—overhead drilling in stopes and raises where the conditions of the work do not demand that the drill be equipped for automatic rotation of the drill-steel.

Size of Drill Steel.

In making recommendations for machine standardisation the standardisation of drill-steel should be embodied, for to my knowledge there is no good reason why for 98% of the underground conditions encountered in metal mining there should be more than three sizes and shapes employed.

(a) $\frac{7}{8}$-in quarter-octagon hollow drill-steel equipped with a $\frac{7}{8}$-in. collared quarter-octagon shank $3\frac{1}{4}$ in. long. Applicable to machines 1, 2, 4, 5, 7, and 8.

(b) $1\frac{1}{2}$-in. solid cruciform twisted drill-steel equipped with a $\frac{7}{8}$-in. collared quarter-octagon shank $3\frac{1}{4}$ in. long. Applicable to machine 3.

(c) $1\frac{1}{4}$-in. round, hollow drill-steel equipped with a $1\frac{1}{4}$-in. round, lugged shank 3 13-16 in. long. Applicable to machine 6.

The $\frac{7}{8}$-in. hollow quarter-octagon section is recommended under (a) because of its angular shape. which, when rotated in the drill-hole, facilitates the ejection of the sludge and prevents mud collars from forming. In cross-sectional area it exceeds that of the hexagon, round, and cruciform shapes of corresponding diameter, thus providing greater strength in comparison, and when the shanks are made in this section,

PARTNER WANTED:

Active or sleeping with £2,000 for afforestation scheme on an established farm in good timber growing district of Transvaal. If active partner, must be a gentleman and willing worker. The scheme is a good sound proposition for one who is desirous of investing funds as an endowment, either for himself or his children. There is an exceptional return for capital invested, and also the possibility of further opening out into another proposition run in conjunction with the farm, with a quicker return, and one which would have the backing of the District.

Write:- **"TIMBER"**

C/o SOUTH AFRICAN MINING & ENGINEERING JOURNAL,

P.O. Box 983. —— **JOHANNESBURG.**

greater bearing surface to resist wear both in the shank and chuck bushing. The shape of the quarter-octagon steel also facilitates the forging of a four-winged bit as the wings may be drawn from the four flattened corners of the bar, and in addition it provides an ideal gripping surface for the dies of the drill-sharpening machine.

Heretofore it has been an accepted theory that in the case of pneumatic-feed drills, a collarless drill-shank is desirable, for by so doing the work of putting the collar on the steel is obviated. This assumed advantage is, however, subject to question when it is considered that the employment of shankless drill-steel necessitates the use of an anvil-block or striking-pin interposed between the hammer-piston and the drill-steel, which depending upon its weight and the character of the blow delivered by the pneumatic hammer, results in a loss of from 20 to 30% of the effectiveness of the blow in transmission through the part. That it precludes the possibility of standardising on two sizes or types of drill-steel for the average hard-rock metal mine and, furthermore, that it precludes the possibility of standardizing on two sizes or types of drill steel for the average hard rock metal mine, and, furthermore, that it precludes the employment of a drill-steel retained as an integral part of the machine for extracting the drill-steel from the drill-hole. The desirability of a collar or lugs at the base of the shank of drill-steel that is adapted for drifting, sinking, pop-holing, drilling, etc., needs no comment; therefore, as a suggestion in view of simplifying the steel equipment of the mine and its standardisation that the same ⅞-in. quarter-octagon, collared drill-steel recommended for other machines employed for sinking, light drifting, breast stoping, and pop-hole drilling be employed for all pneumatic-feed stoping drills.

After the type and size of drill-steel bar and its shank is settled upon, careful consideration should be given to the change length and also to the gauge of the bit for the different steels that comprise a set to drills to a stated depth, it is recommended that a normal change length of 12 in. be adopted for the ⅞-in. collared quarter-octagon steel as applied to machines 1, 2, 4, 5, 7, and 8, an 18-in. change length for the 1½-in. cruciform, twisted solid steel as applied to machine 3, and a 24-in. change length for the 1¼-in. round, hollow lugged steel as applied to machine 6.

(To be continued.)

Railway Electrification.

An interesting debate on railway electrification took place recently by student members of the S.A.I. of E. and S.A.I. of E.E., with Professor Dobson presiding. In winding up the debate the Chairman remarked that steam locomotives would still be necessary in South Africa, for electrification presupposed an increase of passenger or goods traffic. They could take as an instance the growth of the V.F.P., which depended on the magnitude and necessity for a general power generation and distribution scheme. In like manner the electrification problem of railways depended on the magnitude of the traffic, and particularly where the limits of steam had been reached. The Natal section offered a problem particularly applicable to electrification on the lines indicated, as this particular section of the railways would run through the heart of the future industrial zone of South Africa. Careful estimates and schemes had been prepared, and the final opinion was in favour of electrification. The best brains and experience of the world had been brought to bear on this important decision. In this connection it may be noted that tenders are being invited for the steelwork for the proposed power station for the electrification of the line between Maritzburg and Glencoe.

Coronation Syndicate.

The following cable has been sent to the London office: "Luipaardsvlei No. 10 borehole number D intersected Randfontein Leader 3½ inches wide at depth 785 feet assaying 543 pennyweight inches equivalent to 11 pennyweights 6 grains over width of 48 inches. Publish."

The Coal Grading Bill.

The Coal Grading Bill has passed the Committee stage and will be read a third time on Monday. A number of amendments to the Bill were made, the most important of which were the following dealing with the rights of the Railways to commandeer coal. In regard to this point, the Minister of Mines moved the following amendments: To insert "provided that such call shall only be made upon the collieries in the Province or Provinces from which the coal required is usually obtained, and no such call shall be made upon any colliery which has entered into a contract to supply coal to the Administration if that colliery has already supplied to it a reasonable proportion of its output"; and to substitute "Provided that the interception and use of any consignment of coal under this sub-section shall be such as to cause the least possible inconvenience and embarrassment to any colliery, consignee or other person, and." The Minister explained that the whole object was one of safeguarding the public interests, and the amendments were unanimously passed.

* * *

Far West Rand Borings.

In connection with recent borehole developments on the Far West Rand, a correspondent writes: "The highly successful boring operations recently carried out by the Coronation Syndicate on the Farm Luipaardsvlei No. 10, where both reefs of the Randfontein series have been cut at comparatively shallow depths carrying high values have drawn attention to the great possibilities of what may be called the Far West Rand. In borehole B the west reef of the Randfontein series was cut carrying over 33 oz. to the ton, equal to 10·4 dwts. over a stoping width of 48 inches. In borehole C the Randfontein leader was struck assaying over 36 ozs. to the ton, equal to 30·3 dwts. over a stoping width of 48 inches. These results apart from the high values obtained are vitally important to the geology of the Far West Rand as the complete section of the Randfontein series has been proved in the boreholes. Taken in conjunction with the excellent borehole results on the Farm of the Western Rand Estates Company, a continuous line of highly payable reefs has now been proved from the Randfontein Central Gold Mining Company, Ltd., to the Western Rand Estates Company, Ltd., and the Farms Driefontein 614 and Driefontein 591, adjoin on the West the property of the Western Rand Estates. The Coronation Syndicate struck the Main Reef series in their boreholes on Luipaards Vlei No. 10 at a depth of 700 feet, and as Driefontein 591 is on a similar level there is ground for belief that these series will be struck at about the same depth."

RIETFONTEIN & SABIE G.M. CO., LTD.
(Incorporated in the Transvaal.)
(IN VOLUNTARY LIQUIDATION.)

AN OPPORTUNITY FOR TRIBUTORS

The Machinery and Plant at present lying at the Rietfontein Mine, Sabie, is offered for sale.

There is also an opportunity for interested parties to arrange for a Tributors' Lease with the owners, for working the Mine with the above plant.

The Plant consists of a fully-equipped Ten Stamp Battery, Belting, Trucks, Rails, Wood and Iron Buildings, Wire Ropes, etc.

Full particulars can be obtained from the undersigned, to whom tenders should be addressed, marked "Tenders for Tributing."

Tenders will be received up to and including the 10th June, 1922.

By Order,
F. C. MEESER,
Liquidator.

Delmore, 18th May, 1922.

Finance and Information for Investors.

AN EXAMINATION OF BALANCE SHEETS AND REPORTS—DATA FOR SHAREHOLDERS.

New South African Municipal Loans.

The reported plethora of investment money in London, and the lowering of the Bank rate to 4 per cent has tempted several municipalities to raise loans for pressing public works. For instance, the following loans are to be raised by municipalities in the Cape Province: Beaufort West, £13,000 for the installation of a complete electric light plant, or, alternatively, £2,100 for the installation of batteries in connection with the existing plant. Worcester, £5,000 for repayment of moneys spent out of revenue on permanent works and plant and for other purposes. Stutterheim, £4,750 for the erection of a town hall and other buildings.

* * *

Ex-Enemy Shares: Official Statement.

A list of the mining shares held by the Custodian of Enemy Property in the Union appeared in our last issue. In addition to these shares, the Custodian holds, of course, blocks of shares in companies other than mining concerns. Since our last issue the Custodian has made an official statement to Reuter, in which he reviews the position to date. He says.—" It will be remembered that in December last a notice was published in the Press to the effect that, as the result of an agreement entered into between the Public Trustee in England and the Union Custodian, all enemy shares still to be liquidated would be disposed of by the Public Trustee in the case of companies incorporated in the United Kingdom but operating in South Africa, and by the Union Custodian in the case of companies incorporated in South Africa. The notice further stated that the shares would, in the first instance, be offered to the groups and companies concerned, and that it was anticipated that negotiations would take place towards the end of January (last), by which time it was expected that the Union Custodian would be put in possession of certain information and statistics which were necessary and for which he was waiting from the Public Trustee. Matters were delayed partly owing to the strike and partly because some of the statistics required had not reached this country, and in fact some of them have not yet arrived. In a number of cases, however, the Custodian was able to open negotiations about three weeks ago. In the case of the Union Corporation—late Goerz group—the majority of its enemy shares in the Modder Deep and Geduld were sold by the respective Custodians some three years ago, and the sales of shares in those companies now referred to are for balances which have come to light since. Negotiations have also been completed on behalf of several other companies and will be opened in the case of others as soon as the Custodian is in possession of additional information and statistics he is waiting for. The probability is that matters will be completed during the next few weeks, and after that a list of the companies whose enemy shares have been sold will be published. The case of those companies or groups who do not desire to purchase their enemy shares, or where the price offered is not considered sufficiently high, such shares may be retained by the Government, to be disposed of later, or held, according to circumstances. Mining shares, of which a large number were sold during the actual war period by both the Custodian and the Public Trustee, only form a portion of the enemy assets being liquidated in the respective countries. With regard to the disposal of the proceeds of these liquidations, the Union adopted a different article of the Peace Treaty to England, France and other Allied countries, and the correspondent and ' the leading financial authority ' referred to in a morning paper have apparently overlooked the existing Union legislation enacted nearly two years ago, under which South Africa has the use of this money for 30 years. It is then repaid to the late owners of the assets, who, in the meantime receive Government bonds bearing 4 per cent. interest per annum for the amount standing to their credit after liquidation in terms of the Union law."

* * *

Union Currency.

In his Budget speech the other day Mr. Burton announced that the Pretoria Mint would be opened during the current financial year, and it was proposed to introduce a distinctive Union silver coinage. A Bill will be introduced in a few days covering the details of the proposed issue.

* * *

Union Corporation and Geduld.

By a printer's error, paragraphs dealing with the Union Corporation and Geduld in our last issue were merged together. The second portion of the note on the Union Corporation, which dealt with the taking up of the 180,000 reserve shares at 40s., obviously referred to the Geduld Company. Fortunately the error was patent to those interested.

* * *

Reserve Bank.

In view of the appreciation in the price of Reserve Bank shares—anticipated in these columns some time ago—the following latest statement of the bank's finances may be of interest. Liabilities: Capital, £1,000,000; notes in circulation, £550,642; deposits (bankers), £6,251,549 19s. 4d.; other liabilities, £36,003 19s. 5d.; total, £7,838,195 18s. 9d. Assets: Gold coin and bullion, £92,350; gold certificates, £5,524,281; subsidiary coin, £7 13s. 9d.; loans and advances to the Government, £2,200,000; other assets, £21,557 5s.; total, £7,838,195 18s. 9d. Ratio of cash reserves to liabilities to the public, 82·5 per cent.

* * *

New Bloemfontein Loan.

Bloemfontein has accepted an offer from London to float a loan of £400,000 at 5½ per cent. The most interesting part of the discussion which preceded the decision from a general standpoint was a statement by the City Treasurer, Mr. Logan, on the condition of the money market from July to September last year. He said: " I discussed at length our loan situation with the London manager of the bank, and I was shown how hopeless it was then to raise any large sum of money under 7 per cent. In January last we discussed very fully the then financial situation and the loan market, and came to the conclusion that we should postpone the fixing of a large loan. Since then two booms have taken place. On the occasion of the first in March we cabled, but the terms offered were 6 per cent. at 96 for a ten years' period, equalling 6⅝ per cent. We decided to wait further. After a relapse a further sudden rise has taken place. The cable just received offers a loan on a 5½ per cent. basis, which shows the sudden changes that overtake the money markets of to-day, especially so when only a year ago a city of such high standing as Durban was forced to pay 6½ per cent. for £500,000. The question now is: Might it not be wiser to wait for a further reduction, or may not the present reduction be the turning point to higher rates? The financial papers advise that the boom has reached its height and urge their clients to take their profits while they may. No one really knows enough to say with any certainty what may happen beyond a month. The generally received axiom is: bad trade means cheap investment money, as there is no trade outlet for moneys coming due. Good trade needs more capital. If a certain amount of money is attracted by higher profits of business there is less money seeking investment therefore higher rates have to be paid."

Made in Jersey City, U.S.A., by the

JOSEPH DIXON CRUCIBLE CO.

Established 1827.

A SURE WAY TO BETTER LUBRICATION

and a substantial reduction in oil bills, is to use

DIXON'S
TICONDEROGA
FLAKE GRAPHITE

Dixon's Ticonderoga is the original flake lubricating graphite sold for years in the red tins. It has outlived many competitors because it is a good product, carefully prepared and uniform in quality.

No doubt you have a can in your cupboard now for use in an emergency. But why wait for an emergency? Ward it off by using Dixon's Flake Graphite or Dixon's Graphite Grease on all of your machines regularly. *We will gladly tell you how—write for booklet.*

WALWORTH INTERNATIONAL COMPANY,
Foreign Sales Agents.
P.O. Box 3662 'Phone 3195
JOHANNESBURG.

MILLAR DENNIS
ORIGINAL MAKERS OF

'BRADFORD INVERTED"

PLUG COCKS.

SOLE AGENTS:

GEO. CRADOCK
—AND CO. (S.A.), LTD.—
75-77, CULLINAN
BUILDINGS.

P.O. Box 316. Telephone 539.
Tel. Add.: "ROPES."
JOHANNESBURG.

REID BROS.
— (S.A.), LIMITED. —

Sole Agents for:

CARRON COY.—HAULAGE GEARS, Etc.
ANDERSON, BOYES & COY.—ELECTRIC COAL CUTTERS.
HARDY PATENT PICK COY.—"HARDIAX" AIR COAL CUTTERS.
BLANTYRE ENGINEERING COY.—SCREENING PLANT.
WM. ARNOTT & CO.—CORNISH AND LANCASHIRE BOILERS.
QUASI-ARC ELECTRIC WELDING APPARATUS.
SMALL & PARKES—BELTING, PACKING, Etc.
FINNEY PATENT HAND PUMPS.
WELDLESS STEEL CHAINS.
CHAPMAN DOUBLE BALL BEARINGS.

JOHANNESBURG.
P.O. Box 802 'Phones 6070/1
AND AT DURBAN.

The South African Mining and Engineering Journal.

HEAD OFFICE: 176-180 Stock Exchange Buildings (2nd Floor), Fox Street, JOHANNESBURG, Union of South Africa.

Telephone **913.** P.O. Boxes **963** and **4573.**

Cables and Telegraphic Address: "MINING JOURNAL."

ANNUAL SUBSCRIPTION RATES: Oversea, £2; Union of South Africa and Rhodesia, £1 10s.; Local Delivery (Town only), £1 6s., payable in advance.

AGENTS FOR GREAT BRITAIN AND AMERICA: Argus South African Newspapers, Ltd., Byron House, 82-85, Fleet Street, London, E.C. 4.

Copies of this Journal are obtainable at all Branches and Agencies of the Central News Agency, Ltd., at all News Agents and Railway Bookstalls throughout South Africa, and at the London Agency as above.

CONTENTS

PAGE
Additional Crushing Plant at the Geduld 1255
Outside Districts:
Looking Up Lydenburg 1257
Heidelberg 1259
Engineering Section:
Big Turbo Generator 1261
Electrification of the South African Railways .. 1263
Standardisation of Hammer Drills 1265
Topics of the Week 1269-1271
Transvaal Manufacturers 1273
Quarterly Reports: S.A. Townships Group 1274
Rhodesian Section 1275
The Week in the Sharemarket 1277
Letters to the Editor 1278
Trade and Industries Section:
The Week in the Mining Material and Engineering Trades 1279

TOPICS OF THE WEEK.

The National Bank and its Losses.

The National Bank of South Africa has issued a statement, in the course of which it is announced that "the balance at credit of its profit and loss account for the financial year ended March 31, 1922, amounts to £193,000." Such phraseology would naturally induce the unsophisticated shareholder to imagine that the Bank had made a profit. The words "credit balance" certainly would seem to imply that the year's operations had resulted in an excess of revenue over expenditure, but when we read on a little further we find that this figure is arrived at after taking into account (a) the balance of £34,000 brought forward from the previous financial year; (b) a transfer of £300,000 from reserve fund; and (c) a transfer of £25,000 to bank premises account. To the ordinary mind then, that is to say to the lay man inexperienced in matters of haut finance and financial window-dressing, this statement would appear to be capable of being boiled down to the fact that the credit balance of £193,000 was in reality a loss of £141,000, leaving out of the question the item (c), "a transfer of £25,000 to bank premises account," the exact financial significance of which we must confess we do not understand. The statement goes on to declare that all bad and doubtful debts have been fully provided for, and the bank's investments have been taken at or below present market prices. At the general meeting of shareholders, to be held in Pretoria on Friday, June 30 next, the directors will recommend that the profit and loss balance of £193,000 be allocated as follows: Interim dividend for the half-year ended September 30, 1921, at the rate of 8 per cent. per annum, which absorbed £118,000; pension fund, £50,000; balance to be carried forward, £25,000; total, £193,000." The camouflaged admission that the Bank has not been doing too well of late can hardly come as a surprise to the general public for something more circumstantial than mere rumour as to the National's misfortunes has been common knowledge for a considerable time past. In the official statement now published it is stated that "the Bank has not escaped the effects of the grave disturbances that have characterised the financial world for a considerable time past, and, in the result, some specific losses of substantial amount have been sustained, notably in New York. It should be explained that certain of these losses have come to light since the declaration of the interim dividend as at September 30 last. The directors have considered it prudent, and in the best interests of the bank, that in the accounts for the year ended March 31 last, the fullest provision should be made, not alone for the specific losses above referred to, and for all accounts of a doubtful character, but also for unforeseen items that may come to light." The exact nature and extent of these American losses is not specified, but we understand that in the main they were contracted in connection with the failure of Childs, Joseph and Company of New York. This latter firm has been trading as hide and skin and general merchants in a very large way, and has had several branches up the East African coast, in Madagascar, and Red Sea ports. The smash was on a huge scale and arising out of the operations of the firm interesting legal developments are foreshadowed. It has been reported to us by a reliable authority—but we cannot say whether the figure is correct or not—that the National were involved in this financial debacle to the tune of something like two million dollars. The National Bank's statement continues as follows: "After withdrawing from the reserve fund, for this purpose, the sum of £300,000 already mentioned, there still remains intact in reserve the substantial amount of £1,000,000; but the directors, being desirous of maintaining the bank in a position of undoubted strength and ability to meet all the requirements of its clients, think it desirable to withhold any recommendation as to payment of a dividend for the half-year ended March 31 last. The circumstances under which the Bank's losses were possible have formed the subject of close investigation by the directors, who are satisfied that the dispositions which they have made in this regard will avoid risk of recurrence of such losses, and will preserve unimpaired for the future the very valuable business which the bank possesses. The capital of the bank remains, as before, at £2,965,000, while the reserve fund, as above mentioned, now stands at £1,000,000—together £3,965,000." It is common knowledge that some months ago the direction of the Bank was reorganised. It was understood that the National had a vast amount of wool on its hands and that in other directions too the Bank had engaged in business which had not proved very profitable. Emissaries proceeded to Europe to straighten out the wool tangle, and Mr. James Leisk, C.M.G., a former Secretary for Finance in the Union Government, resigned his chairmanship and direction of several important Corner House companies and was appointed chairman and managing director of the Bank. We must congratulate Mr. Leisk and his associates on the courageous steps now taken with a view to putting the financial house in order, and in making "dispositions" which "will avoid risk of recurrence of such losses." In a world of chaotic exchanges and of commercial topsy turveydom trading errors are only to be expected, but whilst we admit no good purpose can be served by crying over spilt milk, we cannot commend the efforts of the local Press to whitewash the whole business. The National Bank of South Africa is advertised as "bankers to the Government of the Union of South Africa in the Transvaal, Natal, and Orange Free State, bankers to the Imperial Government in South Africa," and having regard to the importance of its customers as disclosed in the foregoing recommendation—that is to say, to the public of three Provinces in the Union we feel that the Bank should not escape censure for any [illegible] it may have been guilty in the past [illegible] [illegible] incurred in connection with the general operations of the Bank." The losses were [illegible] in the ordinary business of the Bank. [illegible] the National, and it may pertinently be [illegible] its customers [illegible] should indulge in [illegible] within the [illegible] of a financial institution of this kind, must at least be considered outside the scope of ordinary or general business.

[illegible] strangely inconsistent things. A [illegible] Rand gold mining companies (who through the group connection are not entirely divorced from the Banks which they criticised) were pointing out that the banks were plundering the gold mining industry by charging exorbitant rates for gold realisation. Yet at the same time one cannot regard our banking institutions as clogs upon the wheels of industry and commerce. The National, for instance, although it may have been harsh in its treatment of the gold mines, has been very accommodating towards other customers. Take, for instance, its considerate attitude towards the Pretoria Iron and Steel Industries. At the end of last June the South African Iron and Steel Corporation, which had £6 6s. 2d. cash on hand, was indebted to its bankers for the sum of £29,296 11s. 9d., and this, although at that date the Corporation had not even begun to flood South Africa with rails and various other products of industry. The Corporation has not, in fact, begun [illegible] at this date.

We mention these matters in no carping spirit, but with a sense of appreciation of the thorough policy upon which the National has been apparently engaged, a sense of appreciation that is, we may add, tempered by the knowledge that its operations have not always been consistent with either its resolutions or its reputation.

The Corner House and the Lions.

Mr. F. R. Phillips, who presided at the twenty-seventh ordinary general meeting of the Transvaal Consolidated Land and Exploration Company, Limited, on Friday of last week, succeeded admirably, we think, in giving to shareholders "in a concise manner the clearest picture that is possible of the company's manifold activities." He sketched the company's sound financial position, outlined the tremendous land holdings of the T.C.L., dealt with the company's important coal and tin mining interests, and explained the financial policy in regard to the reduction of capital. He also made the important statement that "during the past year a general survey of the mineral possibilities of the large area over which the company owns mineral rights was undertaken by the company's consulting engineer, Mr. Alan Stuart, in conjunction with Dr. E. T. Mellor, consulting geologist to the Central Mining and Investment Corporation, Ltd. Although no positive discovery resulted from this examination, much useful information was collected, especially in connection with the coal-bearing measures in the north-west Waterberg. The object of the investigation also was to enable us to form the groundwork for further prospecting in those areas, which are known to possess mineral possibilities, and to assist us in formulating a policy as to the disposal or retention of mineral rights over farms of which the company sells or has already sold the surface rights." These presidential perorations in the board-room are, of course, always considered to be incomplete (and rightly so) without a thrust at the Government. Mr. Phillips on this occasion (as his predecessors in office have done for years) attacked the Administration of the Transvaal for maintaining that portion of the Sabie Game Reserve, in which the T.C.L. Company owns farms. We can quite see Mr. Phillips's point, and sympathise with him when he says that "if the State desires permanently to maintain a sanctuary or reserve for the preservation of game, the State must acquire for the public the land needed for the purpose. The State cannot expect or ask private owners to permit indefinitely the use of their land for public purposes." Mr. Phillips further remarked of this subject: "It is our opinion—and I may say that this opinion is largely shared by those who know—that a reduction in the area of the general game reserve would not to any appreciable extent interfere with the preservation of game. It is unnecessary to maintain the hundreds of thousands of head which are being preserved. It is unnecessary to restrict the destruction of vermin as is done in the regulations. It is estimated that the number of lions, for instance, have grown in the last 18 years from two or three hundred to something over three thousand, and similarly the proportion of hunting dogs, jackals and tigers has grown, and this vermin is a menace to stock owners far beyond the confines of the actual game reserve. Lions from the game reserve were found at places 100 miles distant from the reserve itself only last year." Clearly then, in Mr. Phillips's view, a large number of these lions are redundant and they should be retrenched under a *status quo ante*-agreement. Perhaps the T.C.L. would be prepared to accommodate these beasts elsewhere if they were appropriately branded, for we observe that the T.C.L. has quite a tidy bit of ground. In fact, at December 31, 1921, the company possessed full rights over 2,256,611 acres, surface rights only over 213,818 acres, and mineral rights only over 1,300,539 acres. And just as the Government seems to have established or to desire to establish a Game Reserve in perpetuity in the Sabi area, so does the T.C.L. and its associated companies seem to have established or to desire to establish in perpetuity a mineral preserve in the Pilgrims Rest Gold Fields, a matter which we refer to elsewhere in this issue. Surely room can be found for these unfortunate lions somewhere or other in the Transvaal? If Mr. Phillips presses his case sufficiently no doubt the Government will appoint another of its much-loved Commissions to enquire into the future status of Felis Leo in the back gardens of the Corner House, or otherwise into the status of the Corner House in the domicilium of Felis Leo.

A Sop to Cerberus.

Mr T. A. Rickard, "Engineer-Editor," as he is styled by the *Engineering and Mining Journal Press*, which is a consolidation of the *Engineering and Mining Journal* and the *Mining and Scientific Press*, is always outspoken, fearless in his criticism, and invariably sure of his facts. Rickard has had a remarkable career in three continents as manager, consultant State geologist, editor and publisher of mining periodicals, and of technical books, and in an interview with him by Charles Butters and W. T. Loring, published in the *Engineering and Mining Journal Press*, he recounts some of his wide experiences, and says some harsh things about the technical Press. Says Mr. Rickard: "If you want to see to what depth of depravity journalism can fall when it is subventioned and subsidised, you have only to go to London and see how such practices there have degraded the financial and mining journalism of that great centre." Referring to a London technical periodical, Mr. Rickard says: "It was started by me as an independent paper, and, I believe, did good work in its time, but to-day it is going the way of London financial and mining journalism in that it is becoming dependent more upon the so-called company-meeting advertisements than upon straight advertising from manufacturers of mining machinery. In other words, it is being supported largely by the mining companies—the promoters and directors—so that it is departing from the policy of frank and free criticism that made it worth while seven or eight years ago." T. A. R.'s reply to the next query put to him, "You might explain why the companies are willing to pay for the publishing of the reports of their meetings," is equally refreshing. This is the answer: "The primary purpose is publicity; the printing of the proceedings helps to keep the company in the public eye and so assists the market for its shares; the secondary purpose is as a sop to Cerberus, to disarm the financial press. The purchase of space by the company for the report of its meeting, as for its prospectus when it is incubated, has the effect of silencing criticism and of eliciting compliment. The practice gives the promoter and company-monger a control of the papers that are venal, or even complaisant."

We are not going to argue with our engineer editor on these opinions. We do not think many papers will even take any notice of his self impeachment, and that is just the reason why we refer to the matter here.

Labour States its Case.

In giving evidence before the Mining Industry Board during the week, Mr. Crawford made some interesting and important admissions. For instance, in reply to Mr. Pim, he said that "a capitalist was a necessary evil and should be considered." He "had no objection to the natives expressing their opinion," and "no objection was offered by the Mine Workers' Union before the Low Grade Mines Commission to the importation of tropical labour." Mr. George, on the other hand, complained that the employers "especially on the gold mines were being backed up by machinery in recruiting natives both inside and outside the Union." Whilst Sir Carruthers Beattie and Mr. Brace and several witnesses have been preaching the gospel of goodwill, discordant notes are frequently sounded. Thus towards the close of Monday's proceedings, Mr. Lucas explained that there was no question of hostility as far as he and those he represented were concerned in regard to Mr. Price, of the S.A. Mine Workers' Union, and those he represented, to which Mr. Price retorted: "I don't know about that. You are going behind my back to my union." These remarks and little breezes are, to our mind, typical of the lack of cohesion that exists in the ranks of labour and of the contradictory views held by the different members of the different unions on matters of fundamental policy.

Candidly, we are immensely disappointed with the Labour people's statement of their case. It seems to us that their representatives have not, so far, made one single good point, and the bulk of their evidence consists of a bewildering mess of inconsistencies and of contradictory whines without any suggestions of practical utility. The evidence brought forward by Mr. Crawford and others goes, however, to show one thing quite clearly, and that is that the extremists soon gained control of the strike position during the recent trouble, and it seems to us that the first thing to do in order to create and perpetuate the atmosphere of goodwill, which is so urgently needed, is to establish some ways and means of permanently abolishing the revolutionary element from the councils of the saner trades unionists. That, as we pointed out last week, is a hard thing to do, but the reward would be so great that it is certainly worth striving for. It is, however, a matter for congratulation that the Labour representatives have tendered evidence at all. At one time there was, we believe, a serious intention on their part of boycotting the Commission altogether, and it was probably only due to the urgent representations of Mr. Brace that the Unions decided to state their case. The statements thus far made suggest that the Labour people scarcely have any case at all.

The Old, Old Cry; Shortage of Native Labour.

On Tuesday afternoon the Board had before them Mr. G. D. Stephen, manager of the West Rand Consolidated Mine, and Mr. G. A. Chalkley, superintending engineer of the New Consolidated Gold Fields. They submitted a statement dealing with "the bad effects of a fluctuating native supply on production and profits, and the effect of a permanently abundant supply on the number of European labourers employed." After reference to an accompanying chart, the statement proceeded to point out that the tons hoisted per day varies almost directly as the native labour supply increases or decreases, with one exception, which will be pointed out later. There are many evil effects on production and costs on a fluctuating native labour supply. One of the most important is a general all-round disorganisation in underground work. It often results in changing the method of working stopes from machines to hammers as the native labour supply decreases. This means changing natives from one class of work to another for which they are, for the time being, totally unfitted, this disorganisation causing loss in efficiency and profits. During periods of abnormally low native labour supply, development footage often suffers, which may seriously affect the future of the mine. With decreased labour supply, most gangs in the mines are decreased, with a consequent decreased efficiency per white shift; besides the loss in efficiency and profits, another result is the laying off of many white men. All this disorganisation puts up costs, which lessens the amount of ore eventually to be worked.

The Unemployment Commission.

In view of the evidence now being taken by the Mining Industry Board, a special measure of interest attaches to the Unemployment Commission's report, which was "anticipated" in the columns of this journal a few weeks ago and has now been presented to Parliament in Capetown. The Commission deals with restrictions against the development of the mining industry to its utmost extent, and again endorses the recommendations contained in the first interim report that certain recommendations of the Low Grade Mines Commission should be carried out without delay. The Commission further endorses recommendations contained in the first interim report in regard to the contraction and closing down of local industries, and strongly urges that more attention must be given to both primary production and manufacturing. "In regard to the mining industry, however, and more particularly deep level mining, it is much more questionable whether this after all, in view of South African conditions, is a white man's job, having regard to his more delicate upbringing and greater ability to contract phthisis than the intermittent service of the native renders him liable to. If any "policy" were embarked upon it should be to utilise native labour as far as feasible underground and to allow the mining industry to expand and to lay the results or profits under tribute to provide for occupation for whites on the surface. Such a policy would not mean a revolution in our present-day outlook and relations." The report is signed by Messrs. H. L. Lindsay (chairman), J. L. Hamman, J. H. Conradie, C. J. Clark, and Captain Parrack. The report is also signed by Professor Lehfeldt, and Mr. Archibald Crawford, subject to memoranda attached to the report, while Mr. Kentridge submits a minority report almost as long as the majority report. Professor Lehfeldt discusses possible lines of native policy, and urges in view of its complexity that public opinion must have time and opportunity to inform itself as to the alternatives. We wonder whether the Unemployment Commission's report will receive more consideration from the Government than the document produced by the Low Grade Mines Commission!

What the Rand Returns.

Despite the Chamber of Mines office being "decimated by influenza," as Mr. Buckle put it, Mr. Gemmill has been able to submit a lengthy and carefully reasoned statement in regard to the return on capital invested in the mines of the Witwatersrand. It may be recalled that when the Chamber's representatives were giving evidence before the Board on April 28th, Sir Carruthers Beattie referred to figures published in the official year book of the Union of South Africa, showing the capital issued by the gold mining companies and the dividends paid, and drew the conclusion from those figures that the gold mines were returning some 12 per cent. on the capital invested. The Chamber's representatives stated that any such conclusion was quite incorrect, as the yield was very much lower, and they promised to supply information on the subject. The statement submitted by Mr. Gemmill concludes: It would, therefore, seem that it would be not unreasonable to assess the value of the consideration given for the ground as being on the average equal to the interests of the providers of the working capital. That is to say, if the total cash actually expended as working capital by the mines is £69,000,000, that sum should be doubled in order to arrive at the total capital, including vendors' interests, sunk in the mines. But whatever basis is adopted to determine the value of the consideration given for the ground, it is obvious that the Witwatersrand gold mines as a whole are now returning only 4½ per cent. on the working capital invested, and something less than 3 per cent. on the total capital invested including vendors' interest. Reference to the statistics published by the Government Mining Engineer shows that the total premium on shares which accrued to the gold mining companies through the issue of shares at prices above par amounted to £18,700,000. This question may be looked at from several points of view, and obviously in this as in other matters mere figures may be twisted to support almost any sort of conclusion. But the angle from which the ordinary shareholder will look at the problem is certainly that of what he paid for the shares and what money he secures from the investment in the shape of dividends. It would be hard to convince a man who bought Simmer Deeps at fancy prices some years ago that Rand gold mining stocks were lucrative investments giving a yield of 12 per cent. There have unfortunately been a good few propositions which instead of returning anything per cent. have only yielded something perhaps

Notes & News.

Enemy Shares.

It is understood that the Central Mining and Investment Corporation have arranged the purchase from the Custodian of Enemy Property of the shares and debentures in his possession held by enemy subjects in the various companies which are administered by that group. It is rumoured that purchase of the New Modder parcel has been effected at the price of 66s. 3d. per share.

* * *

Modderfontein Deep.

The following cable was dispatched this week from Johannesburg to the London office of the company: "Repairs to rock-hoisting engine have been satisfactorily completed, and normal hoisting of ore was resumed on May 15."

* * *

Lebaudy's Rand Mine Sold.

The executors in the estate of the late M. Lebaudy, famous as the "Emperor of the Sahara," have disposed of the Langlaagte Proprietary Mine. The property, it may be remembered, is situated between the Langlaagte Estate and the Crown Mines, and it is understood to have been acquired by the controlling interests of these two mines. Doubtless the property will be split up between the two neighbouring mines, and the anomaly removed of a Rand outcrop mine lying unworked.

* * *

Head Office Costs.

The following statement, presented to the Mining Industry Board during the week, brings up to date a schedule appearing in the report of the Low Grade Mines Commission. The following are the corresponding administrative figures for the three months—October, November, December, 1921, on 37 mines:—

	£	d
(a) Secretarial, transfer, buying, consulting engineer's and other head office department's fees	60,188	2·472
(b) London and Paris office charges...	17,852	·733
(c) Stationery, printing, advertising, telegrams, etc.	10,233	·420
(d) Directors' and auditors' fees	33,703	1·384
(e) Sundry general head office charges, less any sundry revenue	18,207	·748
	£140,183	5·757

The S.A. Association of Assayers.

The third annual meeting of the above Association was held in the Club of the Associated Scientific and Technical Societies' Club on Saturday, 13th May. Mr. C. Crichton, the retiring President, was again unanimously appointed for the ensuing year and Mr. A. B. Weekes was elected honorary secretary in place of Mr. C. Schertel, who has retired after three years' valuable work. In the course of his presidential address, Mr. Crichton pointed out that "the mines as a whole have not been sufficiently alert to the fact that in the members of our Association they have a body of technically trained men whose services and abilities are not being fully and beneficially utilised. In the absence of any adequate provision for the gaining of practical experience in mill and cyanide works, the scope of our members utility becomes limited, which, besides being unwholesome for the individual, is a distinct loss to the industry and ultimately to the community. I would suggest that an assayer's training should not be considered complete until he has acquired a working knowledge of the reduction works processes, and that in future men from assay offices should be afforded opportunities for applying their technical training to the practical side of metallurgical operations. Unfortunately, in the past the Chamber, by reason of the various agreements entered into with other Associations, has closed avenues of employment which should have been available for and indeed are badly in need of trained assayers, who by reason of their education are specially fitted for this class of work. Had the mines adopted the same short-sighted policy with other departments and placed a brake on the natural ambitions of, say, samplers to become either shift bosses or surveyors, surveyors to become underground managers, and underground managers, general managers, the industry would be in a very parlous condition indeed. Accordingly, we are justified in soliciting the Chamber to create ample and fuller opportunities for assayers, who have devoted time to the study of metallurgical problems and possess the necessary keenness and ambition. There is good human material on the mines waiting and eager for opportunities of development and the onus is on the heads of the industry not to allow trained men of resourceful mentality to become mere ambitionless machines through lack of opportunity and intelligent discrimination in the selection of men to fill positions of responsibility. There is no branch of service on the mines so efficient and progressive as the assay office, and this is due mainly to the improvements effected by Rand assayers themselves, who do not adhere to medieval methods, but have brought a resourceful originality to bear on the many problems involved in the demand for lower working costs and greater rapidity without sacrificing accuracy in the execution of an ever-increasing quantity of work. It remains for this Association to present its members' claim for recognition and encouragement in a wider sphere of operations than obtains to-day, so that well-educated youths entering our profession legitimately entertain hopes of eventually filling positions which now appear very remote and inaccessible. An additional duty also devolves upon us, and that is to render ourselves useful not only in the daily routine work but in other capacities where the possession of chemical knowledge may mean the saving of time and money for the employers. Even at the expense of appearing intrusive, the assayer should proffer his advice and opinion whenever he considers them to be useful." This seems a very reasonable and opportune plea for a class of mine official who undoubtedly have not had justice done to them in the past.

* * *

The Rand Gold Refinery.

The gold shipment by the Arundel Castle last week amounted to 221 boxes, of which 151 were refined gold and 70 unrefined. This calls attention to the fact that the Rand Refinery, which was fully described in these columns some time ago, has again started work after its closing down through the strike. The Refinery was unfortunate enough to open just at the beginning of the strike, so that it is only now able to demonstrate how admirably it can fulfil its functions.

Transvaal Manufacturers

POINTS FROM THE PRESIDENT'S SPEECH—NEED FOR INDUSTRIAL GOODWILL—THE MOZAMBIQUE CONVENTION.

Mr. L. Senwold Skeels, O.B.E., presiding at the quarterly meeting of the Transvaal Manufacturers' Association on Thursday of last week, in the course of a most interesting address remarked, *inter alia*:—

An occasion of this nature cannot pass without reference being made to the upheaval caused by the mining and other strikes which occurred on the Witwatersrand during the first two months of this year, culminating in the tragedy of March 10th to 15th. We have already identified ourselves with a resolution passed by the South African Federated Chamber of Industries, expressing our appreciation of the action of the Government, the magnificent response to duty of the police, the burghers, the active citizens forces and some thousands of private citizens, and in passing I would like to say this, that if this attempt to overthrow the forces of law and order has taught us nothing else, it has at least shown us that the great majority of the people of this country, be they Boer or British, townsmen or countrymen, S.A.P. or Nationalist, are determined to uphold the existing constitution and to support the maintenance of law and order, if necessary at the risk of their lives.

No good object can be served by endeavouring to apportion blame to any particular section of the community for the causes which created the trouble. We may all have our own views on the subject, but, to my mind, we should be much more concerned in endeavouring to learn the lessons taught us during the past few months, and by assisting to remove the possibility of such a catastrophe occurring again.

First of all, we must, I think, preach the gospel of goodwill, without which no real improvement in the relationship between employer and employee can be effected. Here, I would like to suggest to the men themselves, the officials of the unions, and their representatives in Parliament, and even to the Right Honourable William Brace that goodwill must be shown by both sides. It is not for us as manufacturers to take sides in this affair, but we cannot possibly forget that, for many years past, the mine owners and management have done everything possible to foster an improvement in the relationship existing between them and their employees, and their actions have only too often been met with suspicion if not with hostility, and too often looked upon rather as a sign of weakness than met with any measure of reciprocity.

Secondly, it must be the duty of every public-minded citizen, whatever his calling, to do everything possible to assist in securing a more normal state of affairs being resumed, and to my mind we shall always live in some danger of a repetition of the disaster which has so narrowly been averted with a consequent repetition of the loss which the community as a whole has sustained, so long as we place too many of our eggs in one basket.

That this is the position in South Africa to-day no one can deny. We are far too dependent as a community on the mining industry. The country, one notices with the greatest pleasure, is gradually becoming alive to the necessity of fostering and developing its resources by means of the establishment of local industries. In Parliament, amongst all political parties, in the Press, and amongst the general community, it is apparent that there is a growing realisation of the necessity to do everything possible to follow the lead of older countries, and in giving the young industries which were established during the War a chance to fulfil the promise they then showed.

The mercantile community at their last annual meeting, held in October last, did your Association the honour of inviting me as your President to be present at their deliberations, and nothing was more significant to my mind than a resolution which was passed unanimously at that meeting, and which read as follows:—

"This Congress records its satisfaction at the appointment of a permanent industrial advisory board, and recommends for its adoption a settled fiscal policy protecting industries by means of customs tariffs or bounties, where it is considered that this means of protection is better suited to the nature of the industry."

As I have said, I welcome, we all welcome, this gradual change of opinion throughout South Africa, but, gentlemen, we say with all respect that our struggling industries cannot live by virtue of resolutions and changed opinions. We must have action. We, as manufacturers, have shown again and again that certain industries must be assisted in their initial stages if they are to continue to exist and to grow, and we still await the fulfilment of General Smuts' promise to give every proper and legitimate protection to our industries and prevent a relapse to the industrial helplessness that we were in before the War.

The Mozambique Convention, which affects South Africa as a whole, and the Transvaal in particular, is to be reconsidered within the next few months, and therefore I think it is necessary for me to say something from the Transvaal manufacturers' point of view. The vital section from our point of view is, of course, No. 32, which reads as follows:—

"The products of the soil, *or of the industry*, of the Province of Mozambique, shall not be liable to the payment of any import, export or transit duties in the Transvaal, and *vice versa*, the products of the soil or of the industry of the Transvaal shall not be liable to any import, export or transit duties in the Province of Mozambique."

It is probably that, when the Convention was entered into in 1909, this section was not disadvantageous to the Transvaal. It is not at all clear, however, that a similar clause in any revised Convention would react to the benefit of the Transvaal or the Union of South Africa. It is no exaggeration to imagine that certain types of manufacturers, in order to escape the effect of Union industrial legislation, could, under this section, pass over the border into Portuguese territory and there produce a variety of goods which could enter into the Transvaal free of duty, thus doing considerable damage to existing industries in the Union. Such factories would, so I understand, be absolutely uncontrolled in regard to the rates of wages paid, the number of hours worked, the restrictions imposed on the manufacturers of the Union by the Factories Act, Wages Boards and Apprenticeship legislation, the Works and Machinery Act, and so forth, and must prove a menace to industries established in South Africa and operating under the conditions therein imposed.

Not only does this possibility exist so far as concerns the probability of factories being removed from the Union into Portuguese territory, but oversea producers from Continental and other countries may feel justified in starting manufacturing operations in Mozambique, with the object of supplying this market in competition with Union producers under similar non-restricted conditions as those enumerated.

In general, the imports from Mozambique to the Union to-day are raw products of various kinds, and should any revision of the trade articles of the Convention be made with the object of preventing unfair competition with industries established in the Union, the continued flow of raw products into South Africa could be maintained, and perhaps stimulated by an amendment to the customs tariff, providing for the free importation to the Union of all raw materials not produced in this country, and which are required by local industries.

We have consistently for a number of years recommended the Government to adopt this course, not only in regard to imports of raw materials from Mozambique into the Union, but from other parts of the world also.

We also suggest that the Government should consider the advisability of arranging with the Portuguese Government for such raw materials to be admitted into the Union under a free list and not be subject to export duty from the territory of Mozambique.

I think I have said enough to show the considerations will weigh strongly with the manufacturing community of the Union in considering the probable revision of the Convention and its renewal for a period of years. On the high political issues involved, I do not, on this occasion, desire to express an opinion, but simply wish to draw attention to the possibility which exists, of introducing an anomaly which could not but work great hardship and injustice to the established industries of this country

Quarterly Reports S.A. Townships Group.

South African Coal Estates (Witbank), Ltd.

Report of operations for the quarter ended 31st March, 1922:—Output, 100,428 tons; estimated profit, £3,070. Expenditure due to strike, viz., £6,810, has been included in working costs.

Landau Pit.

During most of the quarter the work underground was carried on by the mine officials. Operations generally proceeded very satisfactorily, conditions underground remaining the same and the machinery and plant running well.

Navigation Pit.

The officials also carried on the work on this section. Shortage of orders was experienced. Satisfactory conditions underground were maintained and the coal produced is of good quality.

Leeuwpoort (African Farms) Tin Mines, Ltd.

Report of operations for the quarter ended 31st March, 1922:—During the quarter 4,218 tons of ore were milled and 530 tons of tailings treated, resulting in the recovery of 71 tons of concentrates of an average grade of 58 per cent.

McCreedy Tins (Swaziland), Ltd.

Report of operations for the quarter ended 31st March, 1922:—Owing to the continued low price of tin, active operations have not as yet been resumed.

West End Diamonds, Ltd.

Report of operations for the quarter ended 31st March, 1922:—The erection of plant has been completed. After the customary slight adjustments necessary to some of the units, all the new plant is running satisfactorily. New plant running well, and the first month's trial washing was 17,681 loads, roughly estimated as 9,674 weathered and 8,007 yellow, with a return of 1,017 carats valued at £3,000.

Theron Diamonds, Ltd.

Report of operations for the quarter ended 31st March, 1922:—Although an improvement has taken place in the diamond trade, it is not considered opportune to resume operations.

Rezende Mines, Ltd.

Report of operations for the quarter ended 31st March, 1922:—No shaft sinking was done during the quarter. The development footage for the quarter amounted to 1,211 ft. Tonnage mined, 19,597; waste sorted, 10·7 per cent.; tonnage milled, 17,500; total yield, 8,479·10 fine oz.; total yield per ton, 9·69 dwt. Working revenue (including £4,100 from premium reserve), £40,660 3s., or 46s. 5·63d. per ton milled; working costs, £25,438 6s. 10d., or 29s. 0·87d. per ton milled; working profit, £15,221 16s. 2d., or 17s. 4·76d. per ton milled; sundry revenue, £651 15s. 6d.; total profit, £15,873 11s. 8d. Capital expenditure during the quarter amounted to £1,915, excluding development. The number of natives under engagement at the end of the quarter was 4,111.

WITWATERSRAND DEEP.

The estimate of results for the month of April, 1922, is as under: Tons milled, 27,680; gold recovered, 8,340·380 ozs.; average of stamps running, 180; stamps' running time, 17·197 days; tube mills, 5. The working expenditure, including head office charges, for the month is £31,014, or 22s. 5d. per ton. The estimated working revenue based on an estimate of £4 12s. per fine oz. (less 1s. 9d. realisation charges) is £37,636, or 27s. 2d. per ton. The estimated working profit is £6,622, or 4s. 9d. per ton, from which is to be deducted the capital expenditure for the month of £930, leaving a surplus of £5,692.

State Areas.

INSPECTOR'S REPORT.

The report for the quarter ended the 31st March, 1922, on Government Gold Mining Areas (Modderfontein) Consolidated, Limited, by the Inspector of Mining Leases has the following information:—

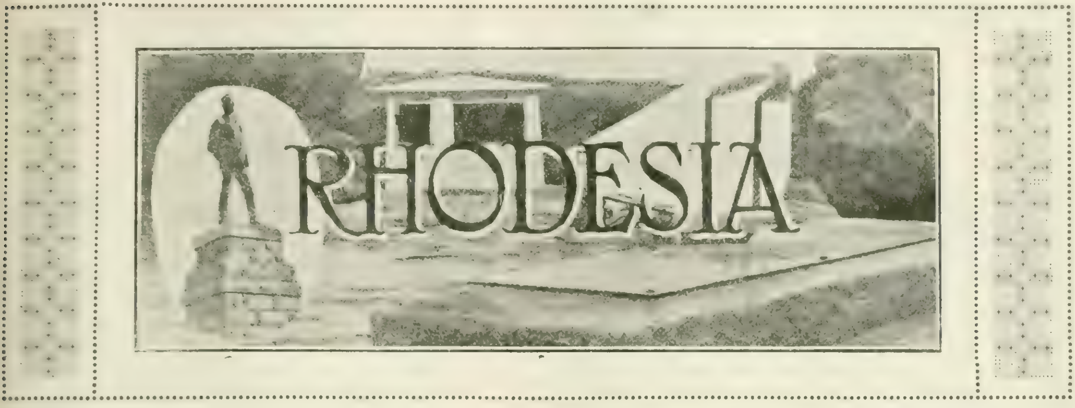
During the quarter the ore reserves as at the 31st December, 1921, were estimated, and the following table gives the reserves at the four shaft sections. The pay limit is the same as for the previous year, namely, 240-inch pennyweights, the minimum stoping width being 54 inches. The tonnage calculated on a stoping width below 60 in., is, however, so small that the pay limit may be taken at 4 dwt. over 60 inches.

Shaft.	Tons.	Width Inches.	Value Dwt.	Percentage.
North-west	2,736,372	78	8·0	26·7
North-east	735,873	70	5·2	7·2
South-west	3,972,977	78	10·1	38·8
South-east	2,786,991	77	7·6	27·3
Totals & Averages	10,232,213	77	8·5	100·0

Compared with the previous estimation as at the 31st December, 1920, the reserves show a decrease of 58,966 tons, the average value has increased from 8·2 dwt. to 8·5 dwt., whilst the average width remains the same. To meet the average working costs for the last quarter of 1921, namely, 21s. 4d. per ton milled, with the price of gold at normal, the lowest reserve value required, after making due allowance for sorting, residues, etc., would be about 4·9 dwt. To render ore of 4 dwt. payable, with costs at 21s. 4d., gold would require to realise about £5 6s. 8d. per ounce. Of the total ore reserves, about 14 per cent. has a value below 4·9 dwt. The general strike of mine employees and subsequent disturbances which took place during the quarter completely dislocated mining operations, and the amount of work carried out, together with the production of gold, bears no comparison with that of previous quarters. The figures for the period under report simply indicate the work it was found possible to carry out, and the sums that have been expended. The costs per ton mined or milled are not shown, as these figures hitherto given in my reports would be of no service for purposes of comparison with those of previous quarters. Operations with the exception of development, were restarted on the 20th March on the calling off of the general strike. Owing to the conditions obtaining, and to the depletion which had taken place in the native labour complement, the tonnage at first handled was necessarily small, but a gradual increase took place, until at the end of the quarter it was found possible to mill at the rate of approximately 4,000 tons per diem. Pumping operations were carried out during the disturbed period, although certain development ends became inaccessible through the accumulation of water. It is not proposed to recommence development work until such time as native labour can be further recruited. At the end of the quarter there was a shortage of about 2,500 natives compared with the normal complement.

RELIABLE EXPORT FIRM WANTS

Thoroughly introduced Selling Agent for Steel and Iron Structural Work, Railway Rolling Stock and glass in any shape and form. Apply with references to **DEVOS & BAUGNIET, Kipdorp 21, Antwerp, BELGIUM.**



SHAMVA PROFITS AND ORE RESERVES.

The following is the report for the quarter ended December 31, 1921, of the Shamva Mines, Ltd.: Milling results—Ore crushed, 175,800 tons; fine gold won, 7,020 oz.; tons cyanided, 175,693 tons; fine gold won, 17,474 oz.; total yield fine gold, 24,494 oz.; value, taking gold at £4 17s. per oz., £118,795; working costs, £84,345; working profit, £34,450. Ore reserves—Total ore reserves at December 31, 1921, 2,801,000 tons; value, 3·5 dwt. With the whole plant, including the additions, running normally throughout the period, tonnage crushed shows a marked improvement, and working costs at 9s. 7d. show a reduction of 1s. per ton. As the gold premium applicable to past quarterly reports could not, at the time of publishing the same, be accurately ascertained, there will be an additional profit shown in the annual accounts. In view of the increased crushing capacity of the plant, and the impossibility in practice of following exactly in stoping operations the contour of the ore bodies as indicated by development, the stopes thus yielding a considerable tonnage of " excess " ore, of lower but still profitable grade, it was decided, in order to approximate more closely to the position resulting from the inclusion of such ore, to recalculate the ore reserves, which now, therefore, are shown to be 2,801,000 tons, averaging 3·5 dwt., as compared with 1,781,000 tons, averaging 4·1 dwt., at the end of the previous quarter.

Working Chrome Iron Ore in Rhodesia.

* * *

Globe and Phoenix.

For the year 1921 the Globe and Phoenix Gold Mining Co., Ltd., reports a profit of only a little over £182,000, against £344,000 for the previous year. A considerably lower grade of ore was treated and the extra revenue from the gold premium fell to £77,250, as compared with £153,500 for 1920. Two dividends of 1s. each (both free of tax) have been paid, against a total of 6s. for 1920, and there is £23,889 to be carried forward, against £11,768 brought in. The ore -rserves have been slightly increased to 110,000 tons, containing 140,100 ozs. of gold, as compared with 93,852 tons and 145,321 ozs. a year ago. The consulting engineer writes:—" The footwall leader has been proved to carry at least one shoot of ore. In my opinion there is a good chance of discovering another shoot to the south. . . . At the bottom of the mine the reef maintains its patchy character, occasional good patches encouraging the hope that a new shoot may be near. From the appearance of the reef and its walls, the much desired improvement in value may still be expected." The report makes no reference to the long anticipated deal for the acquisition or the working on profit sharing terms of the adjoining claims belonging to the Rhodesia Exploration Co., Ltd.

The Great Wankie Colliery, Matabeleland.

WAKEFIELD'S
HIGH-CLASS LUBRICANTS.

The Economy of Paying a Higher Price.

Were we to assert that we could get a good satisfactory engineering job at a low price or that a cheap machine is as good and will do equally good work and be as economical as a first class one.

What would you say or think?

Why not be your own Judge?

Put WAKEFIELD'S LUBRICATING OIL to the test. If a gallon goes further, gives better working results and reduces danger of breakdown, your very pride in your work will decide the matter apart from all selling talk.

TRUE CHEAPNESS IS DECIDED BY THE AMOUNT AND QUALITY OF THE WORK DONE.

Sole Agent for South Africa: **WILLIAM CAMPBELL** P.O. Box 1814, JOHANNESBURG

Sales Representatives:

MARTYN & BELL,

2, Allkin House,
corner Marshall and Harrison Sts.,
Box 3181 JOHANNESBURG. 'Phone 1913

343 West Street,
DURBAN.
'Phone 1368 P.O. Box 206

— THE —

UNION STEEL CORPORATION
(OF SOUTH AFRICA), LIMITED.

OFFICES:

LEWIS & MARKS BUILDING,
JOHANNESBURG, Corner Simmonds and President Streets.

SALES DEPARTMENT:

P.O. Box 4480 Johannesburg.
Telephones: 166 and 6301.
Tel. Add.: "COVER" Johannesburg

WORKS : : VEREENIGING.

MANUFACTURERS OF

Steel Bars, Rounds, Squares, Flats, Angles and Tees. Steel Rails, 16lb., 20lb., 25lb. and 30lb. per yard to British Standard Sections.

Fish Plates. Grizzley Bars. Tube Mill Bars and Pegs in High Carbon Steel.

Steel Castings in Manganese Steel and High Carbon Steel up to 15 tons; also Shoes, Dies, Heads, Cams, Tappets, Crusher Parts and Gearing—The Products of Electric Furnaces.
Reinforcing Bars to Government Specification, in lengths up to 70 feet.

CONTRACTORS TO UNION GOVERNMENT, SOUTH AFRICAN RAILWAYS, MUNICIPALITIES AND MINES.

The Week in the Sharemarket.

RESUMPTION OF FORTNIGHTLY SETTLEMENTS— SEVERAL MINES RECOVERING NORMAL OPERATIONS—SOME ENCOURAGING FEATURES.

The best news received during the week, as far as the market is concerned, is the decision of the London Stock Exchange to resume the fortnightly settlements. Since the outbreak of War all dealings have been for cash, the pre-War settlement system was withdrawn chiefly with the object of curbing speculation. The business of the operator who dealt purely on differences was practically put out of action by the closing of the settlements. He may have had sufficient money to purchase a comparatively small number of shares outright, while with the settlement system in vogue he is able to buy a much larger number of shares, as his capital would be used to pay differences each fortnight if necessary, while his chance of larger profits is greatly increased.

If interest continues in Kafir shares there is little doubt that this feature will have a very material effect on the volume of business.

The issue of the National Bank statement had little or no effect upon the market, as the position was previously fairly well known in financial circles.

We are given to understand that several of the mines are recovering their normal tonnage, and many satisfactory and encouraging features may be looked for in the output declaration for the current month.

	Fri. 12th	Sat. 13th	Mon. 15th	Tues. 16th	Wed. 17th	Thurs 18th
Anglo-Americans	20 9*	20 6	20 6*	20 3	20 6	21 3
Apex Mines . .	6 0*	6 3*	6 3*	6 6*	6 6*	6 6*
Aurora Wests	2 9*	2 6*	2 6*	3 0*	3 0*	3 4*
Bantjes Cons. . .	6 4*	6 4*	6 3*	6 3*	6 3*	6 3*
Brakpan Mines . . .	47 6*	47 6*	47 6*	48 0*	48 6*	48 6
British S.A. .	—	—			11 0*	
Bushveld Tins	0 4*	0 3*	0 4*	0 4*	0 3*	
Cinderella Cons. . .	2 3†	2 3†	2 0*	2 0*	2 3*	2 4
City and Subs. . . .	2 2*	2 2*	—	2 2*	—	—
City Deeps	44 6*	44 0*	44 0	44 0*	44 9*	45 0
Clydesdale Colls.	21 3*	21 9	21 6*	21 9*	22 6	
Con. Diamonds . .	14 6*	14 3*	14 4½	14 6	14 9	14 10½
Con. Investments .	25 0*	25 0*	25 0*	27 6†	25 0*	
Con. Langlaagtes .	—	—	18 0†	13 9*	13 6*	14 0*
Con. Main Reefs . .	10 6	10 6*	10 6		10 6*	10 8*
Con. Mines Select.	12 3†	13 3†			13 6†	12 0*
Coronation Colls. . .	31 3*	31 3*	—	—	—	33 0*
Do. Freeholds .	1 0†	1 0†	1 0†		0 6*	
Do. Syndicates.	4 4*	—	4 3*	4 8†	4 6*	4 10
Crown Diamonds.	6 0*	5 10*	5 9*	5 10	6 0†	6 1
Crown Mines	37 0*	37 0*	37 0*	38 0*	38 3*	38 3
Daggafontein Mines	2 7*	2 10*	2 10*	2 10*	2 10*	2 10*
E.R. Coals . . .	1 7*	1 7*	1 6*		1 6*	1 6*
E.R. Deeps	0 9*	0 9*	0 9*	0 9*		0 9*
E.R. Minings . .	—	12 0*	11 9*		12 0†	11 6†
E.R. Props. . .	6 9*	6 9*	6 6*	6 4*	7 0†	6 7*
E.R. Debentures	£85*			£86*		
Eastern Golds . .	0 6*	0 7*			0 7*	0 7*
Frank Smith Dmds.	3 6*	3 6*	3 6*	3 6*	3 6*	3 6*
Geduld Props. . . .	56 0	—	55 9*	56 9*	57 3*	57 3
Glynn's Lydenburgs	13 0*	13 0*	14 0*	16 0*	16 0*	16 0*
Govt. Areas	86 6	86 0*	86 0	87 3	88 0	87 9*
Hume Pipes .	—	13 0*	13 0*	13 0*		
Knight Centrals .	4 2*	4 2*	4 2*	4 2*	4 2	4 1*
Lace Props. . . .	7 9*	7 9*	7 9*	7 6*	7 6*	8 0†
Leeuwpoort Tins .	6 0*		6 3	6 3	6 3*	6 3*
Luipaardsvlei Est. .	2 6*		2 6*	2 6*		
Lydenburg Farms .	5 0*	5 0*	5 0*	5 5*	5 0*	5 3*
Meyer & Charltons		67 6				
Middelvlei Est. . .					1 8†	1 9†
Modder West . . .	1 0†		1 0†			1 0†
Modder B.'s	30 9	30 9	30 0*	30 9*	31 6	32 3
Modder Deeps . .	43 6	43 6	43 3*	43 10	43 6*	43 10
Modder Easts . . .	8 0	7 10	7 9*	8 0*	8 3	8 4
Natal Navig. Colls	—	30 6*	30 0	30 3*	30 9	30 9
National Banks . .			215 0*	215 0	215 0*	
New Eland Dmds.	25 0*	25 0*	5 0*		25 0*	25 0*
New Era Cons. .	—	5 9*	6 0*	6 0*	6 1*	6 0*
New Geduld Deeps	1 4*	1 5*	1 4*	1 5*	1 5*	1 5*
New Kleinfonteins	6 0*	6 0*	6 6*	6 3	6 3*	6 3
New Modders . . .	75 0	75 0	74 9	74 9*	75 6*	76 9
New Primrose .	—	—	—	—	6 6†	5 0*
New Unifieds .	4 6†	—	4 6†	4 6†	4 6†	4 6†
New State Mines	29 9	29 6*	29 9	29 6*	29 9	30 0
Nigels	—	—	5 6*	5 6*	5 6*	5 6*

	Fri. 12th.	Sat. 13th.	Mon. 15th.	Tues. 16th.	Wed. 17th.	Thurs 18th.
Nourse Mines	12 3*	12 3*	12 3*	12 3*	12 7½	13 4½
Pretoria Cements . .	44 0	45 3*	45 6	45 0	43 9*	45 0*
Princess Estates .	1 0*	1 0*	1 0*	1 0*	1 1*	1 1
Rand Collieries		0 10*		1 0*	1 0*	
Rand Nucleus . .	1 0*	1 1*	1 1*	1 1*	1 1*	1 1*
Rand Select. Corp.		50 0†			50 0†	50 0†
Randftn. Est. . . .	17 1½	17 1	17 1½	17 3	17 3	17 3
Rouxville Dmds. . .		1 1*	1 0*	1 0*	1 0*	1 0*
Roberts Victors .			8 3†		7 6*	7 6*
Rooibergs . . .	3 0*	3 0*	3 0*	3 0*	3 0*	3 0*
Ryan Nigels . . .				4 0†	3 0*	3 0*
Rose Deeps . . .						10 0*
Simmer & Jacks . .	3 1½	3 0*	3 0	3 0*	3 0*	3 1*
S.A. Breweries . .					26 0*	26 0*
S.A. Lands	4 3*	4 4*	4 4*	4 4	4 3*	4 4
Springs Mines . .	41 6	41 9	41 3*	42 9	44 0	45 3
Sub-Nigels	11 6*	11 6*	11 6*	11 6*	11 6*	11 6*
S.A. Alkali . . .	16 0	15 3	15 6*	15 6*	15 6*	15 6*
S.A. Townships . .	8 6*	8 9	8 9*	8 9*	8 9*	8 9*
Transvaal Lands .	18 6†				—	16 6*
Trans. G.M. Est. .	8 6*		8 0*	8 9	9 9	9 9*
Trans. Silvers . .	16 6	15 9*	16 0*		16 9*	17 0*
Tudors	0 8†	0 8†	0 4*	0 4*	0 6*	
Van Dyks	1 0	1 1†	0 10*		1 0	
Van Ryn Deeps . .	67 0*	67 3*	67 0*	68 3	68 6	69 0
Village Deeps . . .	10 3		9 9*	9 9*	10 0*	10 0
West Springs .	9 6	9 3*	9 3*	9 6*	9 6*	9 7½
West Rand Cons. .		3 0*	3 9†	3 0*	3 0*	
Western Rand Est. .	3 10	3 9*		3 9*	3 9*	3 9*
Witbank Colls. . .	39 0*	39 0*	39 0*	39 0*	39 6	39 3*
Witwatersrands . .	11 0*		11 0*	11 0*		11 0*
Wit. Deeps	10 9	9 9	10 96	9 9	10 9*	10 9
Zaaiplaats Tins .	2 2*	2 0*	2 1*	2 0*	2 3*	2 1*
Union 5 per cent.	£101½	£101½*	£101½	£101½	£101 *	£102*

* Buyers. † Sellers. a. Odd lots. b. Ex London.

ANSWERS TO CORRESPONDENTS.

"Rosemead."—(1) We think that the figures given may be improved on. (2) We would not care to commit ourselves to a definite opinion. (3) Gold.

Messrs. Wm. H. Muller, Ltd., London, received an order last month from The South Manchurian Railway Company, Dairen, for 7,000 tons of 100 lb. rails of the famous G.H.H. make, which were specially specified. Messrs. Wm. H. Muller & Co. (Transvaal), Ltd., of Cam Buildings, Simmonds Street, Johannesburg, are the G.H.H. agents for South Africa, and are intimately connected with Mullers, London, and the world-renowned parent firm of Wm. H. Muller & Co., of The Hague (Holland).

SUCCESSFUL

FINANCIAL PUBLICITY!

CONSULT

THE TECHNICAL PUBLICITY AGENCY.

Advertising Advisers, Contractors and Consultants. Specialised, Concentrated, Wasteless, Advertising Service.

Complete Advertising Campaigns Planned and Handled. "Copy" Prepared. Best Media Chosen. Lowest Prices and Best Positions Secured.

Company Flotations a Speciality.

Phone 913. Box 3723.

177, STOCK EXCHANGE, JOHANNESBURG.

Letters to the Editor.

MINE STORES.

To the Editor, S.A. *Mining and Engineering Journal.*

Sir,—Your contributor's article is most interesting, and if the powers that be are really serious in their expressed desire for economy, it should open up a wide field for discussion of the best manner of dealing with the supply and use of stores. The subject naturally divides itself into two heads, *i.e.*, supply and use.

Supply, which one could read to mean buying. Centralisation of buying under one man for each group is a good means of obtaining supplies, provided the man thoroughly understands his work, is always available, and has no "friends" amongst the commercial community. Now, to understand his work is a very wide order, and I venture to say that even amongst the mechanical engineers of the commercial community there are very few men whose knowledge covers all lines of stores used by a mine. If it is advisable to centralise buying, and I think it is, it is surely far better to centralise on other lines. The groups should join together in buying and have a central suite of offices. An expert in each line of mine stores used should be appointed by the groups, and each expert's work would then be to deal with the lines of stores he handles for all the mines. To show the absurdity of the present system, can one imagine a general merchant sending his import orders to a Home firm who employ only one buyer? Any Home firm of buyers employs a number of experts in each branch they deal in, and any firm that did not follow this practice would very soon lose accounts, or the firms here (representing the accounts) would soon be insolvent. Out here, on the mines, we who work in them see every day the absurdities that are perpetrated in the name of buying. To take timber as an instance: what mine buyer ever specifies a grade or grades of Baltic deals, and what rubbish is sent to the mines! Electrical goods, steel, iron, machine spares and innumerable other lines supply instances of inefficient buying, owing to want of knowledge. In fact, if such buying were done for a contractor or manufacturer who has to face severe competition, he would not be left facing it long! Mine buyers are, there is no doubt, strictly honest as a class, but they need expert knowledge in order to carry out their duties in a satisfactory manner. It is only necessary to ask any engineer or foreman on a mine, and he will give you a dismal tale of useless or inferior quality stores received, and of long and unnecessary delays owing to over-centralisation. To close this part of the subject: centralisation in expert hands is of the utmost value; in non-expert hands (to put it mildly) it is worse than useless—it is harmful.

Use—or rather misuse and waste—of stores on a mine. On most mines enormous quantities of stores are issued on the orders of underground officials, and there is little doubt but that heedless waste and extravagance prevail underground. The scrap heaps of mines, piled with machinery, iron, steel, wrenches and spanners, pipe fittings, rock drill spares, etc., show how little regard is paid to the economical use of stores. Underground officials have no time to devote to the subject; their whole energies are devoted to obtaining the necessary tonnage of ore for the reduction plants. There appears to be room on most mines for a business manager whose duty would be to compile statistics regarding the use of stores in different sections of the mine and to eliminate waste and misuse; and further, to see that all repairable stores are repaired and put into use again. He should also see that no stores or tools are used for any other purpose than for the benefit of the mine. This would effectually dispose of the frequent issue of stores and materials to an individual for his own benefit, a practice that is unfortunately far too common. Then, again, travellers who have new goods and new ideas are not allowed to visit the men on the mines, who could use them to the advantage of the mines. Consequently, as they are only allowed to interview the buyer in town (who, incidentally, knows little about the goods) they are unable to introduce time and money-saving devices to the men who could use them. Surely the past has proved that mine officials are as worthy of trust as those employed in head offices. Certainly they have far more capability of judging whether new ideas are of value or not. The business manager, I suggest, could with advantage arrange for the test of such goods as the mine officials think might be of value.

If the mines on these fields are to be worked so that low grade ores are to be payable, it is essential to devote time and attention to each branch of expense. After thirty years of work in connection with mine stores, I venture to prophesy that fifteen to twenty per cent. of the present expenditure on stores could be saved, first by expert buying and prompt delivery, and second, by the use of the available brain power of the men on the mines. It must not be forgotten, however, that one has to pay for brains!—Yours, etc.,

JUNIUS JUNIOR.

16th May, 1922.

WHAT RAND GOLD MINES RETURN.

To the Editor, S.A. *Mining and Engineering Journal.*

Sir,—With your permission I would like to draw the attention of your readers to the statement of Mr. Gemmill, Actuary to the Chamber of Mines, which was submitted to the Mining Industry Board on the 13th inst. This statement deals with the matter of profit returned by the gold mines of the Witwatersrand, and Mr. Gemmill's object appears to be to show that our mining industry is not the attractive investment it has hitherto been regarded, and that, instead of yielding a return of 10 or 12 per cent., it is really only 4½. This is arrived at by Mr. Gemmill as a result of deducting from the annual profit an amount equal to 55 per cent. of the dividend to provide for amortisation. Is this deduction permissible? Deductions for amortisation cannot be continued indefinitely, but as soon as these yearly amounts equal the sum invested the dividends accruing are rightly regarded as net. Evidently this is not Mr. Gemmill's view. In the Government leases amortisation deductions from profits are limited to 20 years and to such yearly amounts as, at 3 per cent., will equal the sum invested.

When Mr. Gemmill's statement comes to be examined by the Board, one can almost hear the exclamation: "Good heavens, man, what has amortisation to do with profit returns of companies which have been in operation for an average of over 20 years and which have returned their capital in dividends and in many cases three or four times over?" From 1887 to 1921, a period of 34 years—including the earlier years when, of course, only a small amount of capital was invested—the mines of the Witwatersrand have returned in dividends the very respectable sum of £152,326,602, as against a total invested capital, as at the end of 1921, of £69,000,000; and it is only fair to the Witwatersrand industry to contend that, having regard to the very large dividends already earned over so long a period, that such dividends should be regarded as net.

I venture this slight criticism solely in the interests of our South Africa. All eyes here are turned towards America and Europe in expectation of an influx of capital; are we likely to get it with a promised return by the Chamber of Mines of 4½ per cent.? We are seeking the patronage of new customers, therefore let us bear in mind that "the goods we show in the window are, at least, as good as what we have in stock."—Yours, etc.,

LEWIS WATKINS.

TRADE AND INDUSTRIES SECTION.

Week in the Mining Material and Engineering Trades.

BUSINESS QUIET BUT CONDITIONS SOUND—IRON AND STEEL — UNION STEEL CORPORATION—BRITISH IRON AND STEEL TRADE—UNION'S GRAIN ELEVATORS—TIMBER AND BUILDING MATERIALS—BRITISH APRIL TRADE RETURNS—SIGNS OF GRADUAL TRADE IMPROVEMENT—HUME PIPE COMPANY—EXPLOSIVES—ELECTRICAL GOODS—OIL—CANADIAN RAILWAY LOSSES—FINANCIAL—METAL MARKET.

Although business is not so good as it was generally thought some two months ago would be the case at this time, conditions are undoubtedly sounder than they have been for a long while, and merchants are not unhopeful of better business conditions within the next two months. At any rate, everything points that way at present—shortly after we have the first half of the present year behind us. Meanwhile people are awaiting developments here and on the other side.

In spite of the seasonal exodus of visitors from the Rand to Europe, there has been a fair amount of building activity during the past week or so, which should be greatly accelerated as soon as the half-yearly grants can be obtained by public bodies sometime in July.

Prices are much about the same. There is a tendency for corrugated iron to harden, and an advance is generally expected within a short time. Timber prices come very firm from the Baltic, especially for 3 x 9 deals, but no movement upward has occurred locally; indeed in some timber lines the inclination has if anything been slightly easier.

The Indemnity Bill has now received the assent of the Governor-General, involving the repeal of martial law here.

Iron and Steel.

An important mining material merchant said he had found things fairly brisk this week, and was not displeased so far with the month's trading. Stocks, he said, are moving and the position was better now than it had been during the past six months. We are now, he stated, cutting our losses and getting in on cheaper goods; it is no use living in a fools' paradise for ever. There was, he said, no scarcity of material just now, and the demand was not unhealthy. He did not look for any decided improvement in business until after the turn of the half-year. Another merchant stated he was fairly busy, but there were no special features to report.

Latest Quotations.—Dunswart iron, 22s. per 100 lb. basis price; Union Steel Corporation, Ltd., 25s. basis; imported iron and steel, flats, rounds and squares, from 28s. 6d. to 35s.; channels and joists, 30s. to 32s. 6d.; imported angles, 32s.; smaller sizes, 33s. 6d.; tee iron, 32s.; shafting, ½ in. down to 3-16 in., 7½d. to 9d. lb.; ⅝ to 1½ in., 6½d.; 1¾ in. to 6 in., 5½d.; steel plates, 1-16, ⅛, 3-16, 23s. 6d.; 10 x 5 and larger, 25s.; spring steel, 7½d. to 8½d. lb.; bolts and nuts, hexagon, round, ⅜, 8½d. to 9¼d. lb.; ½ in., ⅝ and ¾, 40s. to 45s. per 100 lb.; hexagon nuts, ⅜, 8½d.; ½ in., ⅝ and ¾, 7½d.; fish plates, bolts and nuts, ⅜ in., 8d. lb.; ½ in., 6d.; ⅝ in., 5½d.; ¾ in., 5d.; dog spikes, 35s. per 100 lb.; rivets, ¼ in., 11d.; ⅜ in., 9d.; ½ in. and ⅝ in., 37s. 6d. to 40s. per 100 lb., ⅝ in. 50s.; brass rods, ¼ in. 1s. 5d.; ⅜ in. 1s. 3d.; ½ in. 1s. 2d.; ⅝ in. upwards, 1s. 1d. per lb.; hexagon brass rods, 1d. lb. extra; copper rods, ⅜ in., 2s.; ½ in., 1s. 11d.; ⅝ and upwards, 1s. 9d. lb.; tool steel, 2s. 11d. to 3s. 3d.; brass sheets, 1s. 10d. to 2s. lb.; copper sheets, ¼ in. to 18 gauge, 1s 10d. lb.; 20 gauge, 1s. 11d.; 22 gauge to 28 gauge, 2s. lb.; firebox copper, 2s. lb.; copper tubes, ¼ in., 3s. 3d.; ⅜ to ⅝ in., 2s. 6d.; ¾ to 4½ in., from 2s. to 2s. 4d. lb.; phosphor tin, 2s. 11d.; ingot tin (Lamb & Flag), 2s. lb.; ingot lead, £28 per ton; drill steel, 6½d.; hollow, 9¾d.; 1¼ in., 9d. to 10½d.; wire nails, 30s. to 35s.; shovels, 30s. to 40s. doz.; wheelbarrows, 40s.; picks, 37s. 6d. to 50s.; pick handles, 19s. 6d.; hammer handles, 14 in., 7s. 6d.; 18 in., 9s. 6d.; 24 in., 13s. 6d.; 30 in., 17s. 6d.; 36 in., 25s.; barbed wire, "Shorthorn," 69 lb., 13½ gauge, 22s. per coil; plain galvanised fencing wires, No. 8 gauge, 100 lb. coils, 21s. 6d. per coil; No. 10 gauge, 100 lb. coils, 24s. 6d. per coil; No. 12 gauge, 100 lb. coils, 26s. 6d. per coil; bulb tee fencing standards, 14 lb., 19s. 6d. per dozen; 12 lb., 23s. 6d. per dozen; black baling wire, 14 gauge, 19s. per coil, 100 lb.; 12 gauge barbed wire, 22s. per coil, 96 lb.; plain wire, No. 8 galvanised, 21s. per coil, 100 lb.; fencing standards, 12 lb., 20s. per dozen; droppers, 4 ft., 1½ lb., 3d. per dozen; screening, 3s. to 9s. 6d. per sq. yd.; cyanide, 1s, 7½d.; zinc shavings, 1s. per lb.

Union Steel Corporation (S.A.), Ltd.

The Corporation is busy at the present time. Prices are being cut, but, as already intimated, the company is prepared to cut still further in order to secure a fair share of the business going. The company is now rolling 45 lb. rails, the demand for which is fairly good, several orders being on hand for them. The Corporation expects by the end of the present year, possibly even before then, to be rolling channels and I beams. The Corporation is now more particularly busy in delivering steel for the new grain elevators which are being erected all over the Union, the rate of progress of which seems to leave little to be desired.

Engineering Shops.

Generally speaking, things are not going too well with these; some of the larger works are laying off men. More and more it is coming to be realised that repairs, however necessary they may be, are not the be and end all of our engineering industry, and that the sooner what is now being repaired is manufactured in the country the better it will be for us.

British Engineering Dispute.

So far all efforts to bring this lock-out to an end have been unsuccessful. Negotiations are still going on.

British Iron and Steel Trade.

According to latest reports, the iron ore business in Britain is confined to prompt requirements, consumers hesitating to buy for forward delivery until the industrial situation is more settled. In pig iron the outlook is favourable for foreign business. Somewhat higher prices are anticipated in the near future. The prospect is hopeful for iron and steel manufacturers owing to British prices having dropped to a reasonable level and foreign competition being less intense.

Second-hand Machinery.

The second-hand machinery market has been buoyant this week, and a good deal of business has resulted; inquiries still come through from small propositions that appear to be opened up north as well as along the Main Reef Series and the upper reefs. Several concerns along the Reef are arranging with the V.F.P. for power, but it does not diminish the demand for steam power when offered.

The FAIRBANKS Company O.K.

LOOK FOR THE LITTLE O/K LABEL ON A VALVE AS YOU WOULD LOOK FOR THE HALL MARK ON SILVER———IT IS YOUR GUARANTEE OF QUALITY

FAIRBANKS VALVES

LARGE STOCKS ON HAND INCLUDE:—GATE VALVES, CHECK VALVES, SLUICE VALVES, SWING CHECK AND GLOBE VALVES——

SOLE AGENTS FOR SOUTH AFRICA

BARTLE & CO., LTD.,

LOVEDAY HOUSE, BOX 2466. 'PHONE 3553.
WIRES: "FAGGOT."
JOHANNESBURG
BOX 1228, DURBAN. BOX 444, KIMBERLEY.

ROBINS CONVEYING MACHINERY PARTS

¶ A large stock of machinery is in transit from our American Works, and will soon be available for prompt delivery. It includes:

- Robins Conveyor and Elevator Pulleys.
- Robins Ball-and-Socket Bearings.
- Robins Rigid Bearings (*Standard and Extra Heavy*).
- Robins Solid Boxes.
- Robins Safety Set Collars.
- Robins Ball-and-Socket Take-ups.

¶ The following stock is on hand for immediate delivery:

- Robins Five-Pulley Troughing Idlers.
- Robins Solid-Shaft Return Idlers.
- Robins "Durabelt" Conveyor Belt.
- Robins Idler and Bearing Grease Cups.

¶ Prompt deliveries for import of other items of Conveying Machinery can be effected.

ROBINS CONVEYORS (S.A.), Ltd.
(Head Office: Robins Conveying Belt Co., New York U.S.A.)
BOX 4736, 'PHONE 4182, JOHANNESBURG

SOUTH AMERICA

HEAD OFFICE:
MONTREAL, CANADA

We offer a complete banking service in the following countries, special attention being given to the handling of collections.

ARGENTINE
Buenos Aires (2 Branches).

BRAZIL
Rio de Janeiro, Santos, Sao Paulo.

URUGUAY
Montevideo.

VENEZUELA
Caracas, Ciudad Bolivar. Maracaibo.

COLOMBIA
Barranquilla.

BR. GUIANA
Georgetown, Rose Hall, New Amsterdam.

Also 90 Branches in
CUBA, PORTO RICO, DOMINICAN REPUBLIC, HAITI, COSTA RICA, BR. HONDURAS, BRITISH WEST INDIES and FRENCH WEST INDIES

614 Branches throughout CANADA & NEWFOUNDLAND

LONDON
Princes St., E.C.

PARIS
28, Rue du Quatre-Septembre.

NEW YORK
68, William St.

BARCELONA
Plaza de Cataluna 6.

THE ROYAL BANK OF CANADA

CAPITAL PAID UP & RESERVES $41,000,000
TOTAL RESOURCES - - $500,000,000

Small batteries have been well inquired for during the past week, one dealer alone having sold two sets. The demands are mostly for heavier stamps of 1,100 to 1,200 lbs. These are very scarce, in fact, batteries are very scarce. There is a good demand for rails, and some good business has been done lately.

North Shore Bridge, Sydney.

Mr. J. J. C. Bradfield, M.E., Engineer-in-Chief, Metropolitan Railways, and member of the Senate of Sydney University, who is the author of the accepted design for the North Shore Bridge, Sydney, has left there for London, *via* Canada and America, in connection with the tenders for the bridge. The total length of the steel structure of the Sydney Harbour Bridge will be 2,600 feet, the main span being 1,600 feet., and will be 456 feet above water level. The bridge, which will take nearly ten years to complete, will cost between four and five millions sterling

Britain's Biggest Locomotive.

The Great Northern Railway have just introduced for their express passenger trains the first of a new type of mammoth locomotive, which has been built at their works at Doncaster. The new engine, No. 1,470, is the largest and most powerful passenger engine yet used in the British Isles. The boiler has a total heating surface of 3;455 square feet, as compared with 2,533 square feet in the "Atlantic" type. The engine, with tender, weighs 151 tons, carries eight tons of coal and 5,000 gallons of water, and can haul a load of 600 tons at 55 miles per hour. It is proposed to bring it into service forthwith, probably on the "Flying Scotsman," which has left King's Cross at 10 a.m. for over sixty years. Other improvements just introduced by the company include new sleeping cars for the night services by the East Coast route between King's Cross and Aberdeen. Every possible device calculated to promote the comfort of the passengers has been embodied, such as double floors, roofs and sides (the spaces being filled with hair-felt to deaden sound), specially constructed beds, with brown camel-hair blankets, hot and cold water, large mirror, folding table, semi-indirect light, which can be dimmed for night light, reading light, radiator and electric fans. The switches controlling the light, bells, fans, heat-regulator and the ventilator handle can all be operated by the passenger while lying in bed.

Union's Grain Elevators.

It is stated that the foundations for the 42,000 tons terminal elevator at Durban, bringing the work up to the ground level, are about half completed and the subsidiary work is well under weigh. At Capetown difficulties have been encountered in connection with the only suitable site for the 30,000 tons terminal elevator, which has delayed construction, but it is anticipated these will be surmounted and work commenced at no distant date. A start has been made in the construction of group elevators in the Free State, and within two or three weeks further groups in the Transvaal will also be under weigh. The work is being pushed forward with the utmost energy both by the Railway Administration and the contractors. The engineering strike in England is likely to cause some delay where the bulk of the mechanical equipment and structural work is being manufactured.

Tenders Asked For.

The Barkly West Municipality are inviting tenders by the 26th June, 1922, for the supply of steel pipes, specials, valves, hydrants, lead and yarn, suction gas engines and pumps, pumphouse and well, sedimentation tanks, filters and service reservoir, in connection with their new waterworks scheme. The Johannesburg Town Council for water piping (Contract 916), electric cable (Contract 917) by the 22nd June, 1922.

Timber and Building Materials.

The timber trade has been quite fair during the past week, a slight fillip having occurred in building operations. Baltic timber prices are still very firm, 3 x 9 deals especially so, but no alterations have as yet taken place in local prices.

Timber prices.—3 x 9 deals, 1s. 1d.; scantlings, 10½d.; beaver boards, 4¼d. to 4½d.; floorings, 6¼d. to 6½d; ceilings, 4¼d. to 4½d.; Oregon, 5s. 6d. to 6s. 6d. a cube; pitch pine, 7s. 6d. to 8s.; corrugated iron, 8d. to 10d. with a firmer tendency. Furniture timber: Burmah teak, 17s. 6d. per cube here for first quality, 14s. 6d. for second at the coast; American oak, 1 in., 10½d.; 1½ in., 11d.; 2 in., 11½d., at coast; and Japanese oak, 1 in., 1s. 1d.; 1½ in., 2 in., 1s. 2d., at coast; West African mahogany, 1 in. to 4 in. thick, 26s. 9d. to 27s. 6d. per cube at coast; Rhodesian mahogany, 9s. per cubic foot at mills; Honduras mahogany, 30s. per cubic foot; American yellow pine, 1s. 6d. per foot of 1 x 12 here; American pine shelving, 10d. per ft.; 3-ply wood, 3 m.m. up to 5 m.m., alder and birch, 4d. to 6½d. per sq. ft.; oak and teak, 3-ply, 11d. per sq. ft. Prices for bricks remain unchanged at: Klompje bricks, 25s. per 100 at works; fire bricks, £10 per 1,000 at works; mixed, 70s.; wire-cuts, £4 10s. to £5; and £5 for pressed per 1,000, at kilns; columns from 20s. to 30s., according to size; roofing tiles, Marseilles, £25 per 1,000 at the works; chimney pots, 12 in., 7s. 6d.; 15 in., 9s.; 18 in., 10s. 6d.; dry red oxide, 16s. per 100 lbs.; white lime, 7s.; unslaked. 10s. 6d. per 180 lb. bag; 8 lb. bag, 1s.; blue lime, 4s. 3d.; blue plaster lime, 5s. 3d.; cement, 11s. 6d. a bag; damp course and roofing, 36s., 54s. to 55s. for 1 to 3-ply.

The building trade is showing a slight improvement; there are more inquiries, and generally things appear to be brightening a little and more encouraging than for some time past.

Second-hand Timber and Iron Yards.

There is no change to report in this section, business still remaining very quiet. Iron is 6d. and timber 8d., with stocks on the scarce side.

British April Trade Returns.

The Board of Trade returns for April give the value of imports for that month as £80,000,000, and exports £55,000,000, as compared with £87,000,000 and £64,000,000 respectively for March, showing a considerable decline in both items, including £1,500,000 in machinery and over £3,000,000 in vehicles, including locomotives, carriages and ships. The most hopeful sign is the increase of imports of raw materials of £5,000,000, chiefly raw cotton and wool, which is looked upon as a preparation for greater trade activity, and also showing that trade is on a sounder basis owing to the lower prices at which raw materials are obtained. The feature of the export trade is the increase in coal, cotton, yarn and manufactures. Taking the first quarter of 1921 only 30 per cent. of the value of the imports came from British possessions, whereas the first quarter of 1922 shows that the total imports of £234,000,000, the amount derived from within the Empire was £76,500,000, or approximately 33 per cent. As regards the exports of £186,000,000 last quarter, £75,500,000 went to British possessions, or 41 per cent., whereas during the first quarter of 1921 43 per cent. went to places within the Empire. During the first quarter of 1920 only 31 per cent. of the total of British exports was consigned to the Dominions, but the inference is drawn that the Dominions are more regular customers than foreigners through bad times. The Right Hon. Stanley Baldwin (President of the Board of Trade), in introducing the Board of Trade estimates in the House of Commons, reviewed the position of trade generally throughout the world. The British industries had, he said, mostly liquidated the stocks which had accumulated during the boom which was experienced for a short time after the War, but the reduction of taxation was essential to the normal resumption of business. The coal trade alone had reached the economic level, and it was the only trade where the exports were something like the pre-War average, but unfortunately there was no great demand for industrial coal, and the trade was not likely to revive till trade generally [illegible] The iron and steel trade was expecting a very bad time and was not likely to reach a paying position for some time as the world was convinced that bottom prices had not yet been reached. But Britain's productive power was greater than ever, while London remained the world's financial centre. Mr. Baldwin quoted the percentages of exports since 1913, showing that Britain was slowly climbing out of the pit into which she fell on the collapse of the first war boom, and which pointed to the eve of better times. He forecasted a slow but gradual improvement of trade.

Empire Trade Revival.

Signs have not been wanting during the past few months that trade in Britain is taking a definitely upward trend. The recent returns by the Board of Trade are, on the whole, of an encouraging nature, and the improving outlook has been reflected to some extent in a firmer tone in industrial securities on the Stock Exchange. The banks also confirm the impression that there has been a distinct change for the better in the trade outlook. Indications, however, do not point at present to any rapid development, but to a gradual improvement in trade activity.

At the Wolverhampton Conference of the National Chamber of Trade, Mr. Blakemore expressed the opinion that a trade revival was imminent, but did not agree with the labour idea that Russia was the key to the salvation of the present economic conditions. He was more in favour of concentrating on efforts favouring inter-Imperial trade.

Revival in British Coal Trade.

The British coal mining industry—probably the only industry in Britain to-day in like case—is slowly making its way towards a position of economic stability. Big progress has been made in that direction since last year's great coal stoppage. The output is now at the rate of 260,000,000 tons a year, in spite of the industrial depression, which aggregate is about 20,000,000 below the maximum recorded in 1913. The absorption of practically the whole of the increase in the output is attributed to a recovery of oversea markets. British coal is now being exported at the rate of about 68,000,000 tons per annum, which volume is ahead of the total of any year up to 1911 and not far short of 1913. The fears that British coal had been definitely ousted by American and other sources have proved groundless, and Welsh collieries have now numerous orders for outside markets which at one time it was thought might be irretrievably lost to us. In order to put the coal mining industry soundly on its feet again, a further increase in the output per miner will have to be achieved. The miners' wages are very low in many districts, and profits are non-existent in spite of recent wage reductions.

Hume Pipe Industry.

The Hume Pipe Company has secured the contract for the supply of concrete pipes for the whole of the water reticulation service at Reitz. It has also secured for the third year in succession the supply of concrete pipes to the Transvaal Provincial Administration, and further a large order from the Posts and Telegraphs for concrete conduit pipes.

Explosives.

The British South African Explosives Co., Ltd., announce the reduction of nitrate of lead to £57 10s., less 5 per cent., from £60, less 5 per cent. Stocks of explosives are gradually being worked off, so that within the next few months a reduction in price may be expected which the recent strike naturally delayed. The price of detonators and fuse remains the same.

Electrical Goods.

Things are a little better, said a big importer this week, both locally and outside; orders are coming in more freely. Prices are much about the same, the tendency if anything being upwards. Lamps are, however, about 10 per cent. down, being 14s. to 15s. a dozen wholesale and 16s. 6d to 18s. retail; with this exception, prices are very firm. Stocks on hand are abundant in all lines and are being added to regularly by incoming consignments, prices of which so far remain constant.

Oil.

The Royal Dutch Group are bringing out an issue of two million dollars in 8 per cent. preferred stock of the Shell Union Corporation. This company is a merger of the American properties of the Royal Dutch Shell Group and the Union Oil Company of California.

Oil interests have been well to the fore at Genoa in the scramble which is going on for Russian concessions. The British Government has set its face against any agreement calculated to give any oil group a virtual monopoly in Russia. The American Government has authoritatively informed the Genoa Conference that it insists upon the open door where Russian oil concessions are concerned.

Rand Unemployment.

General Smuts defined his policy in regard to unemployment on the Rand this week to a number of the Reef members. There is no present intention, he said, of opening local construction works, such as the building of the new station at Johannesburg, or the lowering of the track within urban limits, which if put in hand now might attract a further inrush of applicants for relief from outside districts. The short six-mile section at Benoni, the Premier stated, will, however, be proceeded with. The Government aims at affording the necessary relief to the destitute by work on the Hartebeestpoort dam and afforestation schemes.

Canadian Railway Losses.

In face of the Union's railway deficits it is, of course, poor consolation to know that we are not singular in running our railway systems at present at a loss. The Canadian national railway system entailed a loss last year of £16,000,000. In 1920 the loss on same was just under £15,000,000. Until Canada again begins to move forward at something like the pre-War pace it is to be feared that the national railways will continue to prove a burden on the Dominion Treasury.

Wage Reductions in New Zealand.

A Wellington message says that the Arbitration Court has decided on a reduction in weekly wages of 5s. for men, 2s. 5d. for women, and 1s. 6d. for juniors. Employers' representatives have dissented from the decision on the ground that the deductions were insufficient.

JUST PUBLISHED.

PROVISIONAL

Geological Map of Southern Rhodesia.

On one sheet measuring 33 by 35 inches.

Scale 1 : 1000000, or about 16 miles to one inch.

Showing the geological formations in 12 colours, sites of the principal mines, railways, rivers, etc. Compiled by the Geological Survey of Southern Rhodesia, and sold at the Mining Commissioner's Offices in Bulawayo, Gatooma, Gwelo, Salisbury, Umtali and Victoria.

Price £1 (**postage to the Union 1/1 extra**).

Shipyards Strike.

The shipyard workers have resumed work in many places, notably on the Clyde, but only a few have been taken on owing to the dearth of repair work. There has been little response to the offer made by the employers to engage men individually.

Union Loan.

Arrangements, it is announced, have been made in London for the placing of £4,000,000 of Union of South Africa Treasury bills having a currency of six months. The bills were dated April 20 and will fall due on October 20. The rate of discount at which the bills have been placed is approximately 3 per cent., and financial circles in London anticipate that before they fall due a new loan will be raised by the Union Government to provide for their maturity.

According to a message from New York, the Jugo-Slav Government has arranged a loan with American bankers of 100 million dollars (£20,000,000), which will be issued at 85 per cent. and bear interest at 8 per cent. The money is to be expended in the improvement of communications and the construction of a new railway line to Adriatic ports. The loan is guaranteed by customs receipts.

S.A. Reserve Bank.

The statement of the South African Reserve Bank for the week ended May 13 shows ratio of reserves to liabilities to public at 82·5 per cent.

Lignite Development in Australia.

Active development of the Moorwell deposits of lignite in the State of Victoria has been pursued since the War. Large quantities are now available for the generation of electricity on a large scale at a central station in the Moorwell lignite field. The power house now being erected will be the largest in the southern hemisphere, and plans are being prepared for the transmission of power from Moorwell over more than 200 miles to the western district of the State.

Coal Discovery in South Australia.—Recently an extensive brown coal field has been located at Moorlands, about 90 miles from Adelaide. As South Australia has no coalfields of its own, and is entirely dependent on the New South Wales collieries for fuel, the discovery is of great importance. Upwards of 7,000,000 tons of workable coal have already been disclosed. The State Government is investigating the possibility of utilising the deposits for the generation of electricity for use in Adelaide and other towns. If this can be done the industrial outlook in South Australia will be much improved.

The East Rand Railway.

The deviation of the railway on the Far East Rand has been definitely decided upon by the Government and work will be put in hand almost immediately. A considerable sum is involved, £160,000, but under the present circumstances of unemployment the action of the Government seems more than justified.

Automatic Telephone Exchange.

The Posts and Telegraphs Department will shortly instal the first automatic telephone equipment in the public service at Camp's Bay. It is not a full automatic exchange, but is what is known as the community telephone switchboard, and provides means whereby new subscribers can be accommodated and also those on existing telephone lines through an automatic connection. Another installation is being installed at Pretoria. Preparations are being made for the installation of regular automatic exchanges in Port Elizabeth and Maritzburg, and will probably be put in hand within the next twelve months.

Closing Down of Rolls-Royce Works.

These works at Derby, where normally 1,000 persons are engaged, have been closed down till further notice, in consequence of demonstrations against non-unionists who remained at work during the engineering lock-out.

Freights in England.

English and Welsh railway companies announce important reductions in freight rates on iron, steel, raw materials and other goods. This reduction is likely to help the revival of trade to a considerable extent.

Metal Quotations.

London, 15th May.—Standard copper, £60 7s. 6d. cash, £60 10s. forward; electrolytic copper, £66 cash, £68 forward; standard tin, £149 7s. 6d. cash, £150 17s. 6d. forward; foreign lead, £24 cash, £23 forward; quicksilver, £10 17s. 6d.; bar silver, 36½d.; bar gold, 93s. 3d. per oz.

INVESTORS' DIARY.

Forthcoming Company Meetings.

(a) Annual general meeting; (s) special or extraordinary general meeting.

Meetings will be held in Johannesburg unless otherwise stated.

May 23.—Rose Deep (a), 11 a.m.; Village Deep, (a), 12 noon; S.A. Land and Exploration Co., (a), 12 noon; Geldenhuis Deep, (a), 2.30 p.m.

May 26.—City Deep, (a), 11 a.m.; Robinson G.M., (a), 12 noon; Modder Deep Levels (a), 12 noon; Knight Central (a), 2.30 p.m.; Geduld Proprietary Mines (a), 3 p.m.

May 29.—Union Corporation, (a), 11 a.m.; West Springs, (a), 11 a.m.; Daggafontein Mines, (a), 11.30 a.m.; Springs Mines, (a), 12 noon; Brakpan Mines, (a), 2.30 p.m.; Rand Selection Corporation, (a), 3.15 p.m.; New Era Consolidated, (a), 3.45 p.m.

June 1.—Crown Mines, (a), 11 a.m.; Durban Roodepoort Deep, (a), 2.30 p.m.

June 2.—Rand Mines, (a), 11 a.m.

June 3.—Transvaal Coal Corporation, (a), 10.30 a.m.; Anglo-American Corporation, (a), 11 a.m.

June 8.—Meyer and Charlton, (a), 11 a.m.; New Primrose, (a), 11.30 a.m.; New Unified, (a), 11.45 a.m.; Langlaagte Estate, (a), 12 noon; New Goch, (a), 12 noon; Randfontein Central, (a), 3 p.m.; Roodepoort United, (a), 3 p.m.; Randfontein Estates, (a), 3.30 p.m.; West Rand Consolidated, (a), 4 p.m.

June 9.—Consolidated Langlaagte Mines, (a), 10.30 a.m.; Witwatersrand G.M. Co., (a), 10.50 a.m.; Cinderella Consolidated, (a), 11 a.m.; Aurora West United, (a), 12 noon; New State Areas, (a), 2.40 p.m.; Van Ryn Deep, (a), 3 p.m.; Rand Collieries, (a), 3 p.m.; New Steyn Estate, (a), 3.30 p.m.; Government Areas, (a), 3.45 p.m.; Sacke Estates, (a), 4 p.m.

MINES DEPT. EXAMS.
CERTIFICATES AWARDED INSTITUTE.

MANAGERS' EXAMS., September, 1921, January, 1922.

We obtained 15 out of a total 22 certificates awarded in South Africa

	Metal	Coal	Totals
Ours	9	6	15
Rest of S.A.	4	3	7

Total for S.A. 22

OVERSEERS' CERTIFICATES (Metal).

So far as we know we have only had 6 failures during 1921, and secured two-thirds of the certificates issued in S.A. during the past twe years.

TUITION (Metal or Coal) by class, correspondence or privately

Mining Institute (Prof. Yates),
St. James' Mansions, Eloff St. Johannesburg

Manufacturers of all Classes
of STEEL WIRE ROPES,
including Flattened
Strand and Lock
Coil.

EXCELSIOR
WIRE ROPE COMPANY, Ltd., CARDIFF.

Sole Agents:
FLINT & EPTON,
HOWARD BUILDINGS,
JOHANNESBURG.

THE BALDWIN LOCOMOTIVE WORKS
(OF PHILADELPHIA, PENNSYLVANIA, U.S.A.)
BUILDERS OF LOCOMOTIVES SINCE 1831.
ANNUAL CAPACITY .. 3,500 LOCOMOTIVES.

Locomotives, Steam, Electric, Petrol (or other spirit) Fireless.
Locomotive Parts.
Railway and Ore Trucks of all types and sizes.
Cane and Industrial Cars and Tramway Equipment.

Wheels. Axles. Tyres.
Ladd Water Tube Boilers (to burn coal or bagasse).
Wilson Plastic-Arc Electric Welders.
Elwell-Parker Storage Battery Trucks.
Fitler Rope for Drilling and General Purposes.

WORKS AT
PHILADELPHIA AND EDDYSTONE, PENNSYLVANIA.

INDIVIDUAL SERVICE - WORLD WIDE

Loveday House, (Loveday and Marshall Streets), JOHANNESBURG
P.O. Box 7017. Cable and Telegraphic Address: "BALDLOCO." Telephone 1816.

CARBIDE
——ALL SIZES——
IN 1, 5, 10, 50 lb. TINS
and 100 lb. DRUMS

Apply: MANAGER,
RAND CARBIDE, LTD.,
SOUTH GERMISTON.
'Phone 252 Germiston.

RHODESIAN TEAK & MAHOGANY
FOR MINING & BUILDING PURPOSES,
ANT, ROT AND DAMP RESISTING.

Sleepers, Guide Blocks, Deals, Scantlings, Flooring (Machined for Secret Nailing) and all kinds of Purpose-Made Joinery, Fencing Posts, Etc.

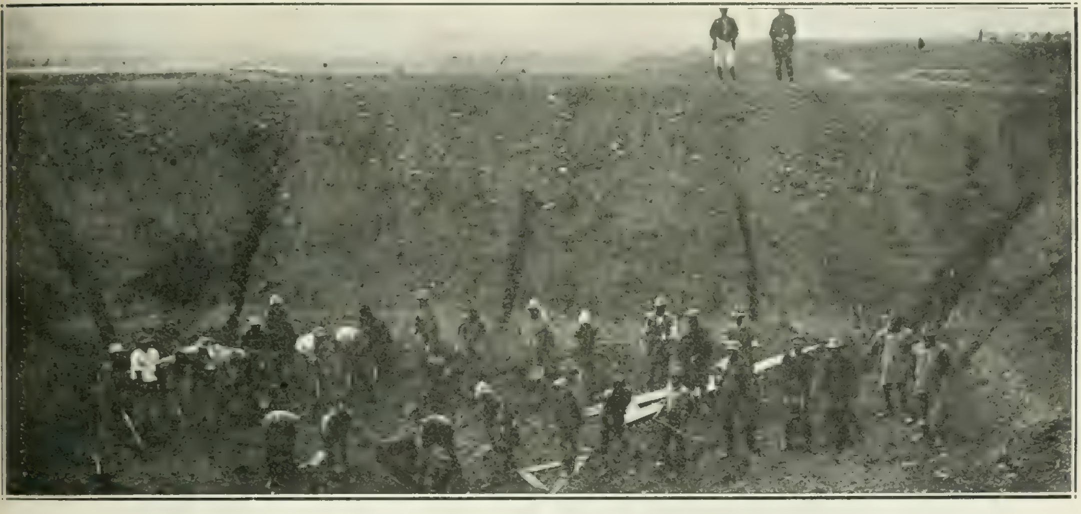
PRICES MODERATE.

RHODESIA NATIVE TIMBER CONCESSIONS,
35, PERMANENT BUILDINGS, HARRISON STREET,
JOHANNESBURG.
Box 5530—Phone 3568—Yard: Eloff St. Extension

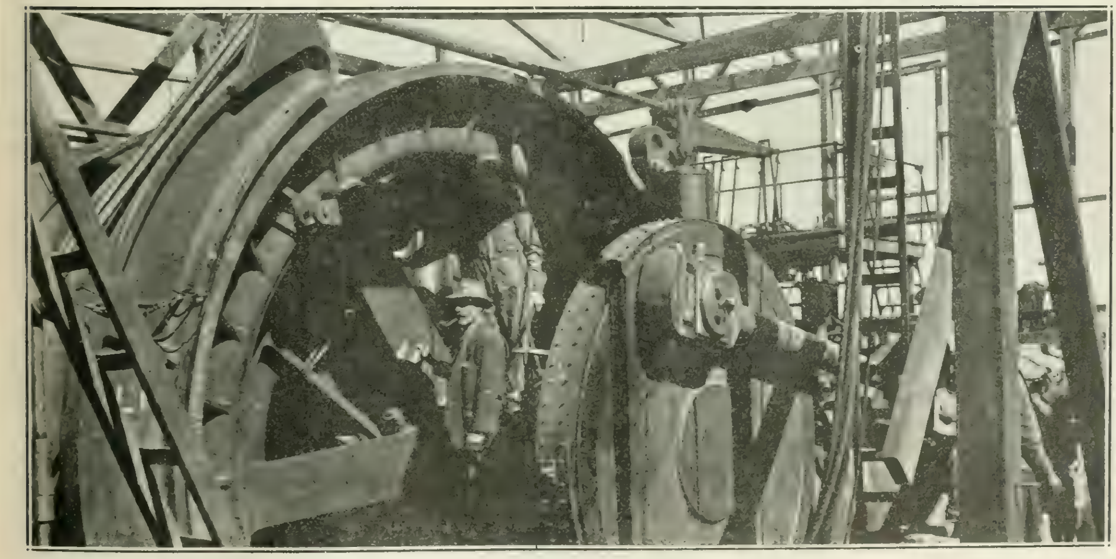
The South African
Mining & Engineering Journal
THE ONLY WEEKLY MINING PAPER IN THE CONTINENT OF AFRICA.
Established 1891.

Vol. XXXIII., Part I. JOHANNESBURG, TRANSVAAL, SATURDAY, MAY 27, 1922. No. 1600

Preparing the New State Mine for Production.



Excavations for the Slime Concrete Tanks.



INSTALLING A NEW WINDER AT THE SOUTH SHAFT.

The two photographs given above illustrate excavation and constructional work at the New State Areas, where a plant of 50,000 tons capacity will be at work early next year. An article dealing with the proposition appears in this issue.

SIEMENS BROTHERS
AND
COMPANY, LIMITED.

MANUFACTURERS OF

CABLES

AERIAL, UNDERGROUND, SUBMARINE.
Paper Insulated. Rubber Insulated.
Gutta-Percha Insulated.
Lead Covered. Armoured.

CABLE ACCESSORIES

Joint Boxes. Connection Boxes.
Service Boxes.
Insulating Compounds. Tapes.

TELEPHONES

Manual Exchanges. Automatic Exchanges.
Intercommunication Sets.
Loud-speaking Telephones. Portable Telephones.
Mining Telephones.

PRIMARY CELLS

Fluid and Dry.

WIRES

Rubber Covered. Gutta-Percha Covered.
Cotton Covered. Silk Covered.
Asbestos Covered. Enamelled.
Motor Car Leads.

TELEGRAPHS

Inkers. Sounders. Relays.
Keys, &c. Station Sets.
Fast-Speed Apparatus.

LINE MATERIAL

Tubular Poles. Lattice Poles.
Pole Structures.
Arms. Brackets. Insulators.

SIGNALLING APPARATUS

For RAILWAYS—
(Siemens's All-Electric Power System)
and for
SHIPS, MINES, POWER STATIONS.

Representatives in South Africa:

A. J. G. SIMPSON, A.M.I.E.E.
African Life Buildings, 85, St. George's St.,
CAPE TOWN.
P.O. Box 239, Cape Town. Telephone 1202 Central.

G. H. B. BERNARD, A.M.I.E.E.
9-10, Cotts Buildings, Rissik and Fox Sts.,
JOHANNESBURG.
P. O. Box 7404, Johannesburg. Telephone 408 Central.

Telegrams : "SIEMENS."

The Rand's New Mine.

COMMENCEMENT OF CONSTRUCTIONAL WORK AT THE NEW STATE AREAS—HOW THE GOVERNMENT STANDS TO BENEFIT—WHAT THE BIG SISTER PROPOSITION HAS PAID TO THE GOVERNMENT—SOME INTERESTING PHOTOS.

In the early part of next year the gold production of the Witwatersrand will be augmented by a substantial output and the coffers of the Government will be enriched by the commencement of gold recovery operations at the New State Areas. This 2,000-claim proposition will be the second mining property on the Witwatersrand in respect of the whole of which a substantial proportion of the profits will accrue to the Government in terms of the lease agreement entered into between the Union of South Africa and the controlling house—the Johannesburg Consolidated Investment Company.

The State's Revenue from Government Areas.

As is well known, the J.C.I. people have already made a huge success—not only for themselves but for the State as well—of the Government Gold Mining Areas on Modderfontein, which was the first all leasehold proposition to be worked on the basis of a certain percentage of the profits secured accruing to the Government. It is not perhaps realised what a prolific earner of public revenue the Government Gold Mining Areas property has proved itself to be, and it may not therefore be amiss to point out that last year the coffers of the Treasury were enriched to the extent of £896,211, whilst in the preceding year the company paid £882,975 to the Government. At the same time the property has proved a notable dividend earner, the amounts distributed to shareholders in 1921 being £770,000 and in 1920 £700,000. These figures give an indication of the potential value of the New State Mine to the country. The mine is as yet in its initial stages of development, and it cannot of course be assumed at this early date in the New State Company's history that the proposition will have such a wonderful career of prosperity as its big sister proposition to the north-west.

Excavations for the Ore Receiving Bins at the New State Mine.

Government Areas and New States.

It may, however, be recalled that some considerable period of time elapsed before the first Government Areas mine began to disclose such extensive stretches of highly profitable reef as have enabled it to become the premier gold mine of the world both in respect of profit earning and production and ore reserves. The Government Areas is indeed in such a strong position to-day that the earning of a profit of £200,000 per month is probably well within the range of its ability. Capital is the same, namely £1,400,000, both in respect of the old Government Areas and the New States, but in the case of the latter property the percentage of profit accruing to the State is on a higher scale, i.e. one more favourable to the public revenue. It is therefore not practicable at this juncture to venture any even approximate estimate as to the amounts that will accrue to Government and shareholders from the commencement of milling operations at the Rand's new mine, but a little study of the company's latest reports makes it seem clear that the property is likely to prove a very valuable asset to the country.

Equipment at New State Areas.

In our issue of a few weeks ago we gave a description of the new plant which is to be erected there and which in several respects will constitute a radical departure from existing reduction and treatment plants on the Witwatersrand. We are this week enabled to publish photographs illustrating the progress of initial constructional work on the property. The frontispiece of this issue illustrates a winder just installed at the No. 1 shaft and also the excavations for the slimes tanks, whilst on this page another photograph depicting the excavations for the ore receiving bins is given.

The New Plant.

Full details of the New State's equipment were given in our issues of April 8 and 15, but it may not be amiss to here give a brief outline of the equipment upon which preparatory constructional work already has been started. The New State plant will have a capacity of 50,000 tons per month and all sliming of the ore will be effected by means of a combination of crushers and tube mills. Gravity stamps and amalgamating plates will be entirely eliminated, and it is confidently calculated that by the adoption of these new ideas there will be not only a large saving in capital expenditure but that working costs will be substantially reduced whilst the value of the ultimate residues will be certainly no higher than is the value of residues in the older plants. The ore from the headgear bins will pass into a large receiving bin capable of holding 1,300 tons. From these the ore will be transported and sorted on three sorting belts to the crushers. There will be three sets of crushers, of which two will be in commission and one will be a standby set. In the primary set Hadfield's jaw crushers will reduce the ore to 2¼ in. cubes. In the secondary set, there will be horizontal disc crushers, which will reduce the rock to a maximum size of one inch. The whole of the crusher plant of the New State Areas equipment is being supplied by the well-known Sheffield firm of Messrs. Hadfield's, Ltd. From the secondary crushers a main conveyor will then take the rock to the tube mill bins. There will be 13 tube mills, each 6½ ft. by 20 ft. Each tube mill will have a Dorr classifier and there will be no amalgamation. Each of these tube mills will be operated by a 250 h.p. motor. Spent pebbles and rounded grits coming from the tube mills will be dealt with by grit pebble crushers. The pulp from the tubes will be pumped by 8 in. main slime pumps to the slime collectors. Ore will enter the water current in the crushers, and as soon as the pulp reaches the tube mills it will come into the cyanide circuit and will be crushed in a cyanide solution. The slime collectors will be of a new type. They will be concrete square tanks. Eight of these tanks are to be erected. The overflow from them will go to three tanks of the same type. The slimes will pass on to the Brown agitator tanks. Instead of the standard type of Brown tank, which is 15 ft. by 45 ft., the agitator tanks at the New State Areas will be 22 ft. by 45 ft., thus giving double capacity in one tank. The slime from the Brown tanks will next pass to a pulp storage tank and from there will gravitate to a Butters filter plant of 600 leaves. The solution from the Butters filter will pass through classifiers in the usual way to a deaeration plant and from this to the Merrill zinc dust precipitation presses, the solution being returned to a big storage tank. The plant will have an initial capacity of 600,000 tons per annum, but will be capable of considerable expansion and can, in point of fact, be duplicated for a comparatively small outlay.

Geduld Progress: Splendid Ore Reserve Position.

The Geduld goes from success to success. In our last issue exclusive details were given of the new reduction plant extensions, and at the annual meeting, held this week, the chairman, Mr. P. M. Anderson, fully described the position and prospects of the mine. Mr. Anderson's speech will appear in our next issue. On Monday the following official statement was issued by the company:—" The following cable has been despatched to London: In connection with the extension of plant to a capacity of 65,000 tons per month, the consulting engineer gives the following reasons for recommendation: (1) Present sound ore reserve position. (2) Rate of development of high-grade ore has for some years been equal to requirements of this enlarged plant, and prospects for future development of high-grade ore continue favourable. (3) Apart from high-grade ore, there is developed 2,500,000 tons of low-grade ore not included in ore reserves, which could be profitably mined at anticipated lower working costs, due to improved industrial position and further reduction when operating on enlarged scale. By inclusion of this ore consulting engineer estimates payable ore now available 6,000,000 tons, having an average assay value of 6·6 dwt. over a stoping width of 61 inches."

INVESTORS' DIARY.

Forthcoming Company Meetings.

(a) Annual general meeting. (s) special or extraordinary general meeting.

Meetings will be held in Johannesburg unless otherwise stated.

May 29.—Union Corporation, (a), 11 a.m.; West Springs, (a), 11 a.m.; Daggafontein Mines, (a), 11.30 a.m.; Springs Mines, (a), 12 noon; Brakpan Mines, (a), 2.30 p.m.; Rand Selection Corporation, (a), 3.15 p.m.; New Era Consolidated, (a), 3.45 p.m.

June 1.—Crown Mines, (a), 11 a.m.; Durban Roodepoort Deep, (a), 2.30 p.m.

June 2.—Rand Mines, (a), 11 a.m.

June 3.—Transvaal Coal Corporation, (a), 10.30 a.m.; Anglo-American Corporation, (a), 11 a.m.

June 8.—Meyer and Charlton, (a), 11 a.m.; New Primrose, (a), 11.30 a.m.; New Unified, (a), 11.45 a.m.; Langlaagte Estate, (a), 12 noon; New Goch, (a), 12 noon; Randfontein Central, (a), 3 p.m.; Roodepoort United, (a), 3 p.m.; Randfontein Estates, (a), 3.30 p.m.; West Rand Consolidated, (a), 4 p.m.

June 9.—Consolidated Langlaagte Mines, (a), 10.30 a.m.; Witwatersrand G.M. Co., (a), 10.50 a.m.; Cinderella Consolidated, (a), 11 a.m.; Aurora West United, (a), 12 noon; New State Areas, (a), 2.40 p.m.; Van Ryn Deep, (a), 3 p.m.; Rand Collieries, (a), 3 p.m.; New Steyn Estate, (a), 3.30 p.m.; Government Areas, (a), 3.45 p.m.; Sacke Estates, (a), 4 p.m.

British Motor Liners.

Excellent results continue to be obtained by the oil-driven ships constructed in Great Britain. Recently a large passenger liner equipped with oil engines completed a round voyage from the United Kingdom to India and back; and the commander of the ship reported that the engines " ran like a sewing machine." Even at the present heavy price of oil the voyage showed a considerable economy in the cost of fuel in comparison with coal. The passengers benefited from the absence of coaling on the voyage and by the minimising of vibration. The daily consumption of oil at 14 knots was less than 18 tons. Another British oil-driven ship proved on her trials that she could run at 13 knots on 16 tons of oil per day. The oil is carried in the double bottom of the vessel and there is sufficient capacity for a voyage of 30,000 miles.

MAGNOLIA
ANTIFRICTION METAL
"FLOWER" BRAND.
TRADE MARK

HAS THE LOWEST CO-EFFICIENT OF FRICTION.
KEEPS down the bill for lubricants, making **BEARINGS** smooth as glass and keeping them **COOL** under heaviest pressures and highest speeds.
Manufactured and Sold By—
THE MAGNOLIA ANTI-FRICTION
METAL CO. OF GREAT BRITAIN, LIMITED,
49, QUEEN VICTORIA STREET, LONDON, E.C.
Agents for South Africa: FRASER & CHALMERS, Ltd., Johannesburg, Bulawayo and Salisbury

The Union's Coal Trade.

PRIME MINISTER ON "OUTLETS"—STAGNATION AT DELAGOA—ACTIVITY AT VRYHEID—SOME INTERESTING FIGURES.

Speaking in the House of Assembly on Monday, the Prime Minister referred to the coal industry as the second mainstay of the country, and he pointed out that it depended on several factors. "Unless we can supply sufficient and proper outlets for the export of our coal to the Indian Ocean the coal industry of this country will remain bottled up and become throttled," said General Smuts. "Every effort is being made with the Portuguese delegation now in this country to obtain this outlet, and I am hoping that within a few years the coal industry will become one of the greatest industries in this country." At the moment the coal trade of the Transvaal is dull, although the position in Natal and particularly in the Vryheid district is good

The trouble with the Transvaal industry is not so much due to any difficulty in regard to "outlets," as the Prime Minister put it, but simply because there is little demand at Delagoa Bay for coal from this province at the present time.

Transvaal Coal in 1922.

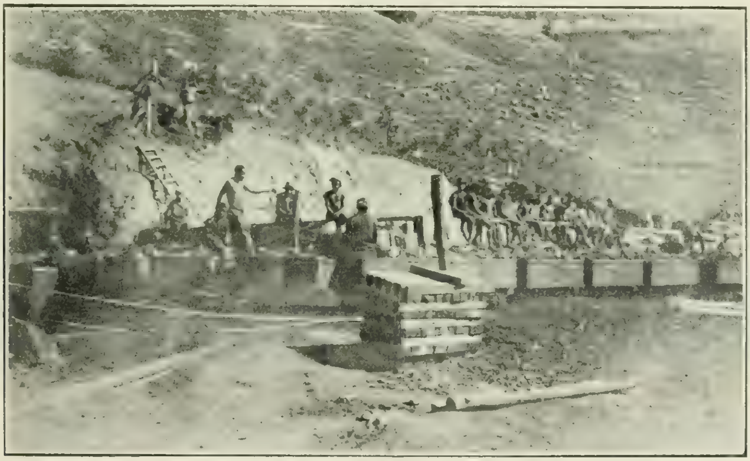
The tonnage sent to Delagoa Bay for the first four months of the year shows a serious decline, and the depressing feature is the fall of April tonnage compared with March. The January tonnage railed to Delagoa was 103,000 but probably that figure included the surplus tonnage from the previous year. In February, probably due to the strike, there was a big fall to 39,000 tons. March saw an upward jump to 88,000 tons, and there seemed to be a very hopeful outlook. But the drop to 62,000 tons in April, especially when compared with a great increase in Natal export is most disappointing. The bunkering figures are most depressing, and the position calls for serious consideration. The week before last the total amount of coal from the Transvaal that was handled at Delagoa Bay was 2,925 tons, all for ship's bunkers. This means that three trains handling a little over 900 tons each were quite sufficient to deal with all the coal required. There are 14 large locomotives, and 11 of them are normally engaged in the coal trade. As the wages of firemen and drivers have to be paid whether their locomotives are running or not, the loss in this one department is serious

Competition from Europe.

One cause in the decline in the export trade was the miners' strike, but there is also the Cardiff competition. Coal can be put on board at that port for 25s. per ton, and many charters are arranged for Mauritius and other mid-east ports, and the charters are glad to take out coal, even if they only make the expense of their charter to the port of destination. Charters are generally made in London, where there is no cargo of such a nature as will give them bulk offering for South African ports. Therefore, the vessels have to come out empty and earn nothing until they receive their cargo here. With the higher price for ship's space (charter), Transvaal coal is more than 25s. per ton, say, at Bombay, than the Welsh product. Besides, Cardiff coal is of superior quality to that of the Transvaal

Lost Trade.

It is a question, therefore, whether the lost trade can be secured again. It is not considered likely that we shall ever go back to the time when coal was put free on truck at Witbank under 5s. per ton, and the average railage was 70d. less a debate of one shilling per ton on export coal to Lourenco Marques. But it is a question how far reductions can be made in the cost of production and railage to enable coal to be landed more cheaply at Bombay and other markets than at present. At Lourenco Marques there have been a large number of trucks loaded with coal waiting for steamers, and it has been rumoured that this week there would be two steamers taking cargo coal to an amount of 18,000 tons, which is most exceptional. Naturally, some bunkers will also be taken.



Waiting for Trucks at a Vryheid Colliery.

Vryheid Doing Well.

As against this encouraging reports come from Natal as to the condition of the coal trade there. Particularly is this so in the Vryheid area, where the collieries are working to the utmost of their man power, and have large contracts on hand. Of the collieries the most recent one to reach the producing stage is the Vrede mine, the property of the Natal and Transvaal Collieries, Ltd., which until recently had been hampered in their efforts by the difficulties of truckage, which, in turn, has again brought the railway question into prominence. Developments regarding railway extension in this area are shortly expected.

RYLANDS' STEEL WIRE ROPES

MANUFACTURED BY:
RYLANDS BROTHERS, LTD.,
WARRINGTON, ENGLAND.

SOLE REPRESENTATIVES FOR UNION OF SOUTH AFRICA:—
ARMSTRONGS & MAIN, LTD.,
84, Marshall Street,
JOHANNESBURG.
P.O. BOX 5988. 'PHONE 5203.

LARGE STOCKS ON HAND.

SPECIALISTS ..

IN THE MANUFACTURE AND DESIGN OF
STRUCTURAL STEELWORK.

ARMSTRONGS & MAIN, LTD.,
GENERAL AND CONSTRUCTIONAL
.. ENGINEERS, ..
84, Marshall Street,
JOHANNESBURG.

P.O. BOX 5988. TELEPHONE 5203.

West Springs.

BETTER DEVELOPMENT DISCLOSURES—SHARE PRICES REFLECT IMPROVEMENT—INSPECTOR OF MINING LEASES REPORT.

Better developments in the West Springs property have been reflected in the improved quotations for the shares. The company has had a long innings of bad luck, but is now showing more promising reef disclosures. The operations of this company for the first quarter of the current year are dealt with in the report of the Inspector of Mining Leases, which has just been issued in the *Government Gazette*. Mr Twiddy remarks, *inter alia* :—

Operations.

All operations ceased on the 10th January, the date of the mine workers' strike, with the exception of the essential services, but on the 14th January the men engaged on these services were withdrawn. All electrical and other gear likely to be damaged by water was removed from underground, and baling operations were carried out until the position became so disturbed and precarious that this work finally had to cease and the mine allowed to flood. Arrangements were made about the middle of March to commence dewatering the mine, and at the end of the quarter development work was proceeding in two haulages, and Springs Mines respectively. During the previous quarter a total of 3,915 feet were developed.

Capital Expenditure.

The capital expenditure for the quarter amounted to £25,160, made up as follows :—

Shaft equipment	£130
Development, haulage ways and equipment	10,298
Buildings, surface works, etc.	1,437
General expenses	752
Strike expenses	13,131
	£25,748
Less credit	588
Total	£25,160

Since the conclusion of the period dealt with in this report there has, so we understand, been a further improvement in development disclosures.

West Springs. The Latest Photo.

Development.

The development for the quarter was as follows :—

	Feet.
Haulage ways.	357
Drives	33
Crosscuts, etc.	89
Total	479
Footage on reef	119
Footage sampled	115
Footage payable	25=21·7%
Average reef channel width payable footage ...	41 inches.
Average reef channel value payable footage ...	7·6 dwt.

Of the total development footage, 349 feet and 130 feet were accomplished from the No. 1 Shaft, West Springs

The Union's Elevators

It is officially announced that the complete list of elevators authorised by the Government is as follows :—Storage capacity (tons 2,000 lb.): Port terminal elevators—Durban, 42,000; Capetown, 30,000. Country elevators—Frankfort, 5,800; Heilbron, 5,800; Klerksdorp, 5,800; Reitz, 5,800 Bethal, 4,800; Bethlehem, 4,800; Kroonstad, 4,800; Bothaville, 4,000; Kinross, 4,000; Senekal, 4,000; Rendezvous, 4,000; Lindley Road, 4,000; Balfour, 3,000; Clocolan, 3,000; Ventersdorp, 3,000; Vermaas, 3,000; Coligny, 2,600 Ficksburg, 2,600; Middelburg (Transvaal), 2,600; Makokskraal, 2,600; Moorresburg, 2,600; Potchefstroom, 2,600. Leslie, 2,600; Pienaar's River, 2,200; Ventersburg Road, 1,800; Kaallaagte, 1,800; Leeuwdoorns, 1,800; Maquassie, 1,800; Val, 1,800; Vrede, 1,800; Westminster, 1,800; Davel, 1,800; and Standerton, 1,800.

B.G.E. TRUCK TYPE Cubicles

Possess Great Advantages

as regards :—

1.—Safety.
2.—Flexibility.
3.—Floor space and head room.
4.—Facilities for inspection and cleaning.

Cubicles can be used either singly or grouped to form a complete switchboard for any class of Municipal or Industrial Power House or Sub-station.

They can be placed directly against a wall, as they require no passage way behind.

B.G.E. Truck Type Cubicles are of all steel construction. Built of heavy gauge steel, front panel being quarter-inch enamelled steel plate.

An interlock is provided which renders it impossible for the Truck to be withdrawn or replaced when the oil Switch is closed.

When the Truck is withdrawn the holes through which the plug contacts pass are covered over by a steel plate which automatically comes into position.

Made in standard sizes up to a voltage of 11,000.

The BGEC

Representing The General Electric Co., Ltd., of Eng

Capetown
83/89 Castle St.
Box — 1327
Phone 1401/2
Tel "Induction"

Head Office —
Johannesburg
Corner Loveday and Anderson Streets
Box 2406 Phone 4242/3 Tel.: "Current"

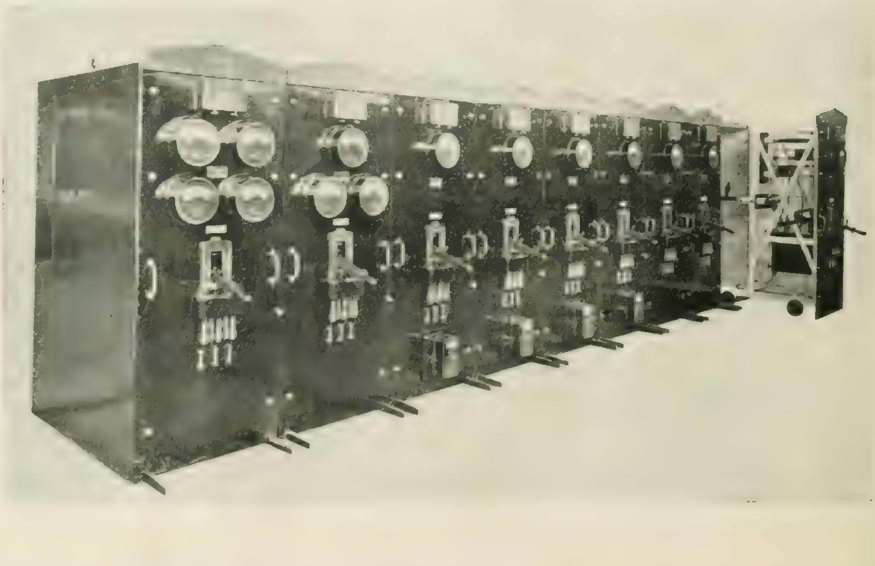
Durban
56 Field Street
Box —— 922
Phone — 1793
Tel —"Ampere"

Agents at—Port Elizabeth, East London, Maritzburg, Bulawayo, Delagoa Bay, Beira, Dar-es-Salam, Tanga, Zanzibar, Mombasa, Nairobi, Uganda, Etc.

6,600 Volt Truck Type

Cubicle Switch Board

RECENTLY SUPPLIED TO A SOUTH AFRICAN MUNICIPALITY



OUTSIDE DISTRICTS

Natal Asbestos.

Writing on the Natal asbestos fields in a recent issue of the *Mercury*, Mr. R. A. Barton says:—

"Samples from the Krantzkop deposit have been sent to practically every country manufacturing asbestos goods, and in every case have been adjudged the 'right stuff,' and inquiries for shipments have promptly followed. Samples were also exhibited at the offices of the South African Trade Commissioner about 18 months ago, and subsequently at the Islington Exhibition, and created much interest. Had the proprietary concerns holding the major portion of this great deposit understood, as they may fairly claim to do to-day, the handling of their properties, mining statistics as to output would have been sufficient demonstration as to the worth of their proposition. Of this more anon. Leading authorities on asbestos from the Rhodesian asbestos fields, and other mining engineers, have visited the Krantzkop deposit, and none has hesitated to admit the fact of immense quantities of fibre and the consequent value of the ground. Unfortunately, the present mining operations were not available for their inspection, prospecting trenches on a very extensive scale being mostly in evidence. As a matter of fact, the ground, as recently opened up, is only now ready for expert inspection. Open-cast mining is now recognised as the correct method of handling this deposit. The Buffalo Asbestos Co., principally a Dundee (Natal) company with a S.A. Cabinet Minister amongst its partners, was the first concern established on the fields, and after two years' handling their proposition the first to recognise the open method of working. Their example was promptly adopted by Natal Asbestos, Ltd., which took up claims a year later than the Buffalo, and whose shareholders are mostly Durban business men. Without offering any excuse for the many months of failure to reach this all-important point in their experience, it is only fair to say that it is particularly difficult to acquire information about asbestos and asbestos mining. Then, again, confusion easily results from experience in other asbestos fields being applied to one in which a different class or occurrences of asbestos occurs. Crocidolite or blue asbestos, with its greater and more regular widths of fibre; amosite or yellow asbestos, running for long distances in regular widths up to 6 in. and more; valuable single chrysotile reefs, such as occur in the Carolina district—experience in one or all of these cannot be applied to the "serpentine" formation of the Krantzkop asbestos fields. On the latter, heavy cross-cutting apparently overlooked as a necessary corollary to determining the nature of the ground and its values, now reveals the fact that for every reef showing on the surface of the ground, from two to six others, hitherto invisible, may be reckoned on as "companions."

On the Krantzkop fields the greatest length of fibre discovered so far is 2½ in., and from that the length ranges down to infinitesimal or to "paper stock." The 2½ in. is, of course, quite exceptional, and in weaving lengths, the proportion of which could only be determined by a review extending over at least 12 months continuous mining and milling, grades Nos. 2 and 3 appear to predominate. Away from weather conditions or water seepage, the fibre is uniformly good throughout the fields, and if the miners observe ordinary carefulness, it will not be difficult to maintain quality. From actual observation, the proportion of rejected fibre appears to be, so far, almost negligible. In common with all other chrysotile deposits, the short fibre, for making slates (shingle stock), and for concrete, paint, and other purposes, greatly predominates, and will be the principal product from these fields. Here, again, to show that this fact does not detract from the value of the Krantzkop fields, but is merely a normal condition, we emphasise a point previously mentioned, viz., that less than 3 per cent. of the output from the Canadian fields is over half an inch in length. Present mining methods on the Krantzkop fields, while now correct in principle, are woefully behind the times in the matter of equipment. Neither of the companies operating has a yard of tram track or a solitary cokopan; no chutes or derricks, everything having to be manhandled. Whatever may have been their experience in the past, the present position of development fully justifies any expenditure which makes for rapid and economical handling. Labour is cheap and of a fairly useful type.

Milling.

The milling arrangements hitherto adopted by proprietary companies have been quaint, to put it mildly. One company has its mill at Dundee, involving transport of selected pay-rock, containing about 30 per cent. to 40 per cent. fibre, to Krantzkop railway station, the first part of the journey being by donkey pack to the wagon road, and thence about 12 miles to the station. From Krantzkop the pay-rock is railed to Dundee, where it is crushed and treated. It is only fair to say, however, that the mill at Dundee was not originally erected in connection with mining at Krantzkop, and can be regarded in the nature of an experiment. The other company has its mill erected at obviously the wrong part of its claims, being situated on a windy and waterless ridge. The original rollers employed have been

MINES DEPT. EXAMS.
CERTIFICATES AWARDED INSTITUTE.

MANAGERS' EXAMS., September, 1921, January, 1922.

We obtained 15 out of a total 22 certificates awarded in South Africa

	Metal	Coal	Totals
Ours	9	6	15
Rest of S.A.	4	3	7
		Total for S.A.	22

OVERSEERS' CERTIFICATES (Metal).

So far as we know we have only had 6 failures during 1921, and secured two-thirds of the certificates issued in S.A. during the past two years.

TUITION (Metal or Coal) by class, correspondence or privately

Mining Institute (Prof. Yates),
St. James' Mansions, Eloff St. Johannesburg

[illegible] Quarries have been opened within about 300 yards of the mill, to which they are connected by an aerial ropeway, over which two tons of selected pay-rock can be moved per shift. It would be a simple and comparatively inexpensive matter to arrange to carry a very much larger quantity by this method. The [illegible] the [illegible] installations [illegible] go up and "empties" down, instead of *vice versa*. Here, [illegible], and in spite of the disability of the mill site, the present plant should be able to "speed up" to an output which should much more than cover expenses.

In the case of both companies, mill sites should be chosen in the valley, where there is an assured water supply. In such a situation, the carriage of pay-rock to the mills, and of the fibre to an excellent Government road to which we make reference later on, is a matter presenting no difficulty. In fact, the contour of the country is admirably adapted for this mode of conveyance. The management of the company owning the mill on the ground claims to have its mining and milling at the stage of "production," and if it can dispose of its "paper and shingle stock" at profitable rates in South Africa, its shareholders will doubtless cheerfully admit the claim. Its present plan is capable of working up to an output of over a ton per day, but of course that implies commensurate mining. Given adequate labour certain mining equipment previously mentioned, a properly-equipped mill erected in the right place on the claims, and this company should do exceedingly well. Its neighbour, we understand, has important negotiations pending with one of the largest asbestos firms in the world, but whatever the "programme" being undertaken by either company, or whatever their achievements to date, the fact remains that they possess between them one of the most valuable asbestos fields in the world.

Transport.

Here, again, proximity to rail and to the coast is a noteworthy feature of this great proposition. It is possible, employing casual transport to railhead, to convey a ton of fibre from the asbestos fields to shipboard at the Point, Durban, for 30s. per ton. Contrast this with Rhodesian transit charges, which, owing to long distances between mines and railhead and thence to Beira, run from £10 to £15 per ton. Rhodesia cannot profitably handle her very short fibre because of these charges, whereas the Krantzkop asbestos fields are so situated as to be able to dispose of the whole of their output. There is, however, a very much better road than the present one, and a proper scheme for dealing with fibre production will naturally aim at utilising the better road, which is being constructed by Government from Krantzkop to Ntingwe, in Zululand, and skirts the edge of the asbestos fields. The care that is being taken in the construction of this road, and the easy gradient chosen, give the impression that the authorities have a railway in view. Be that as it may, the new road is available for mechanical transport, and one day will, we are confident, bear heavy traffic in asbestos fibre.

Box 3807. **Tel. 5892.**

WRIGHT'S ROPES

H. ALERS HANKEY - - - Sole Agent.

The members of the American (Geological) Scientific Mission, Professors Daly, Molengraaff, Wright and Palache, accompanied by Mr. L. Hall, assistant director of the Geological Survey, have left Pretoria for Pietersburg, whence they will proceed through the North-Eastern Transvaal to Sekukuniland, returning via Middelburg. They will be away for five weeks in all.

* * *

It is understood that as the present Acting Chief Mechanical Engineer of the South African Railways, Mr. G. T. Wheatley, will reach the retiring age in about six months' time, Colonel F. R. Collins, formerly of hearquarters, Johannesburg, and now Advisory Engineer to the South African Railways on the High Commissioner's staff in London (who is being succeeded there by Mr. G. G. Elliott, until recently Assistant Chief Mechanical Engineer for the Union Railways) will be appointed as Chief Mechanical Engineer with headquarters at Pretoria, and that Mr. W. H. Sharpe, B.Sc., M.I.C.E., at present railway storekeeper, will be promoted to the post of Assistant Chief Mechanical Engineer.

The S.A. Reserve Bank.

Mr. G. A. Clegg, the Governor of the Reserve Bank, created a precedent by making his speech at the annual meeting of that institution a review of the outstanding events of the year. He dealt with the position of the country, the recent Rand trouble, and the latest currency developments. The new Reserve Bank notes will soon come into circulation, and they seem, from the description of the chairman, admirably designed to fulfil their function. The Reserve Bank has made an auspicious start, and it seems already to have taken an important place in the economic fabric of the country.

APRIL COMPANY REGISTRATIONS.

7082. Myers Silberman & Son, Ltd.; capital, £1,000.
7083. A. Sonnenberg & Barnett, Ltd.; capital, £1,000.
7084. Southern Tyre Company, Ltd.; capital, £1,000.
7085. International Judicial Debt Collecting and Trust Company, Ltd.; capital, £500.
7088. R. L. Tomlinson, Ltd.; capital, £6,750.
7089. Trade Investment Company, Ltd.; capital, £12,000
7090. Loan, Land, and Estate Company (South Africa), Ltd.; capital, £22,000.
7091. The George Goch Rock Crushing Syndicate, Ltd.; capital, £1,050.
7092. Mines and Prizes, Ltd.; capital, £625.
7093. Die Carolina Handelmaats, Beperk; capital, £1,200
7094. Advertiscope Company, Ltd.; capital, £1,000.
7095. New Rietkuil Mines, Ltd.; capital, £20,000.
7096. Hex River Co-operative Citrus Company, Ltd.; capital, £2,000.
7097. The Felix Mineral Water Works, Ltd.; capital, £1,300.
7098. Wm. H. Muller & Company, Ltd. (Transvaal); capital, £50,000.
7099. Walters Taxi-Service, Ltd.; capital, £500.
7100. Buckley & Van Duyn, Ltd.; capital, £20,000.
7101. Boschrand Citrus Company, Ltd.; capital, £12,500.
7102. Argonauts (South Africa), Ltd.; capital, £500.
7103. T.U.C. Co-operative Supply Association, Ltd.; capital, £100.
7104. B. Shelton Corbett, Ltd.; capital, £1,500.
7105. Prowse & De Villiers, Ltd.; capital, £8,000.
7106. Forby, Ltd.; capital, £1,500.
7107. The Strand Tea Rooms, Ltd.; capital, £5,000.
7108. Regent Palace Bioscope Café, Ltd.; capital, £1,000.
7109. Colonial Motors, Ltd.; capital, £10,000.
7110. Land and Share Agency, Ltd.; capital, £100.
7111. Spearman's Sahro Remedies, Ltd.; capital, £6,000.
7112. Pretoria Potteries, Ltd.; capital, £12,000.
7113. Manning, Ltd.; capital, £900.

Mr. Stuart Martin's Evidence.

DECREASED EFFICIENCY AND HIGHER COSTS.

Perhaps the most convincing evidence of all that so far has been tendered to the Industry Board is that of Mr. Stuart Martin, consulting engineer to the Central Mining Investment Corporation (Rand Mines group), who submitted a statement and tabulated figures from the Chamber of Mines dealing with the cost of production on the mines of the Witwatersrand. These figures showed the enormous increase in costs over the period 1914-1921, and also the very significant deterioration in efficiency as measured by the output per white or native employee. This comparison, however (it was stated), does not truly represent the position. In reality the loss of efficiency is much greater, for, during the period under review, working conditions for the Witwatersrand as a whole have so improved that one would have been justified in expecting a very substantial average improvement in output per employee, one which would, at any rate to some extent, have balanced the rise in costs due to the abnormal times. The improved conditions referred to are:—

(a) Some mines working in 1914 have since closed down; others have reached the producing stage since that year. Mines have closed and their places have been taken by new mines on the Far East Rand with up-to-date equipment and easier mining conditions.

(b) There has been sound engineering progress and increased use of labour-saving devices on all mines. For instance, during the last six years there has been a steady and permanent increase in the percentage of rock broken by machines, from 40 per cent. to 60 per cent. This increase is largely due to the introduction of a number of improved types of machines capable of greater duty, at considerable cost to the industry. The mines are still continuing to increase the number of machines, particularly of jackhammers, with a view to economy in native labour, although at greater working cost. In this connection the mines have spent large sums of money in improving the supply of compressed air and water for the machines, and generally drilling conditions are easier than in the past.

(c) Underground lay-outs have improved. Working with larger units by means of mechanical haulages has been responsible for much economy on the newer and larger mines.

For each and all of these reasons there should have been an increase in the output per employee over the period instead of an actual decrease.

The output per white employee has dropped 3·3 per cent. since 1914, and the output per coloured employee 13·7 per cent. over the same period. This latter represents a loss of 2·1 tons per boy per month, equivalent to 340,000 tons hoisted per month over the whole of the Witwatersrand. In startling contrast to this enormous loss of tonnage is the rise in pay of the white employees, viz., from an average of £324 per year in 1914 to an average of £495 per year in 1921—an increase of 52·8 per cent. This increase is reflected in the cost of white wages per ton milled, viz.: 1914, 5s. per ton milled; 1921, 7s. 11d. per ton milled. The increase in native wages, though large in the aggregate, cannot be considered as excessive, and would not have been noticeable on the ton milled basis but for the decreased working hours and resulting fall in output. It must be remembered in this connection that demands for an increase in wages have been made by native employees from time to time, and it has been necessary to improve their scale of remuneration. The drop in efficiency in 1918, as compared with 1917, was due to the introduction of shorter working hours, the 48-hour "at the face" week being altered to 48½ hours "bank to bank." The total amount fell 8·6 per cent., though the number of natives only fell 2·7 per cent., showing a decline in efficiency of 6·1 per cent. The 1917 standard of efficiency has never been regained; still less the 1914 standard, which was 8 per cent. higher than that for 1917. Increased supervision has been provided, at considerable extra cost to the mines, in order to meet the views of the Mines Department in providing extra shift bosses and other officials, including dust samplers, and also with the object of maintaining efficiency.

The diminished output per worker, combined with the increased expenditure due to the higher rate of pay to white employees, higher cost of stores and material, increased railway rates and increased phthisis charges, etc., has caused the cost per ton milled to go up by leaps and bounds. The expenditure position may be summarised as follows:—

	1914.	1921.
Tons milled	25,701,951	23,400,695
Total working expenditure ...	£21,943,692	£30,088,898
Working expenditure per ton milled	17s. 1d	25s. 8d

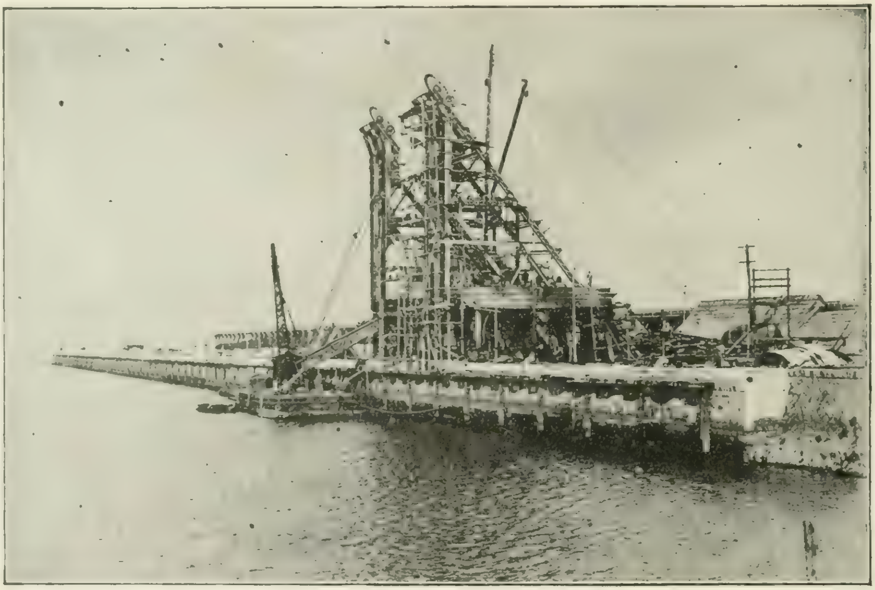
Had the 1921 tonnage been milled at the 1914 cost, viz., 17s. 1d. per ton, an amount of £10,104,781 would have been saved for that year alone. This amount may be segregated approximately as follows: (a) Increase in salaries and wages, £1,187,539; (b) increase due to cost of living allowance, £2,200,000; (c) increase in coloured wages, £1,370,476; (d) increase in cost of stores (about), £3,200,000; (e) increase in all other costs (about), £2,146,766; total, £10,104,781. The decreased efficiency, as shown by actual results, is only a part of the loss sustained. It is not possible to assess the value of the improved working conditions, but that they are very real no one can gainsay, and one could have expected quite justifiably an increased efficiency for the Rand as a whole, as opposed to the actual falling off. The milling capacity of the producing mines at the present time is no less than 29,988,600 tons per year. During 1921 they failed to reach this amount by 6,587,995 tons.

To reach the full milling capacity would require an additional 40,000 natives. Actually some of the mines would be unable to reach full capacity at once, owing to limiting underground conditions, but assuming that only half the additional natives were available, and that 50 per cent. of the tonnage deficit was made up, it would be possible to employ a further, say, 1,500 white men. With an ample supply of native labour and freedom of management, the Industry can look forward to a recovery of efficiency and such a reduction in costs that many of the low grade mines will continue to work for years to come and provide employment to large numbers of Europeans. It is impossible to over-estimate the resulting benefits of a material reduction in working costs. There are vast tonnages of developed ore immediately available, but just below the pay limit under recent conditions; their inclusion will immediately result in extended operations and the employment of additional men. Mines which are on the verge of closing down, through the exhaustion of comparatively high grade ore, will obtain a new lease of life and continue to employ men who would find it difficult to obtain work elsewhere if conditions forced the closing of their mine. Finally the extension of operations and the prolonging of the lives of the older mines will react on the whole country, and continue to provide support for every industry in the sub-continent.

RELIABLE EXPORT FIRM WANTS

Thoroughly introduced Selling Agent for Steel and Iron Structural Work, Railway Rolling Stock and glass in any shape and form. Apply with references to **DEVOS & BAUGNIET, Kipdorp 21, Antwerp, BELGIUM.**

HEAD, WRIGHTSON & CO.,
LIMITED,
THORNABY-ON-TEES. ENGLAND.
MANUFACTURERS OF
MINING MACHINERY, COLLIERY PLANT,
BLAST FURNACE PLANT,
AND ALL CLASSES OF
STRUCTURAL STEELWORK.
"NISSEN" STAMPS, TUBE MILLS,
GRINDING PANS, AGITATORS, TANKS,
FILTERS, Etc.



COAL LOADING PLANT MADE FOR JAPAN.

JOHANNESBURG OFFICES:
HEAD, WRIGHTSON & Co. (South Africa) Ltd.,
64-66, Standard Bank Chambers, Commissioner St.
P.O. Box 1034.—Telephone 3524

Finance and Information for Investors.

AN EXAMINATION OF BALANCE SHEETS AND REPORTS—DATA FOR SHAREHOLDERS.

The Rhodesian Budget.

The Rhodesian Administration is to be congratulated on the very satisfactory nature of the Budget presented last week, which is likely to be its last. In a year which coincides with a period of acute difficulty, including, in the Treasurer's words, "drought and famine and contraction of revenue," the Administration has been able to provide for these contingencies without any undue strain upon the finances of the territory or without imposing any fresh taxation. The actual revenue received for the year 1921-22 was £1,484,813. Adding that to the surplus of £17,823 from the preceding year, there is a total of £1,502,636, which is in round figures £200,000 more than the estimate, or £117,000 more than the revenue of the preceding year. This increase was not expected in view of the uncertain state of trade and industry at the beginning of last year. The total expenditure for the same period was £1,335,000, which deducted from the total revenue and carry forward left a surplus of £167,636 to be brought forward to the current year. The estimated expenditure for this twelve months is put at £1,337,137, and the revenue is placed at £1,185,500. This last sum with the amount brought forward make up a total of £1,353,100, which gives an estimated surplus of £16,000 for contingencies. One reason for the satisfactory financial position is that the mining industry was maintained at the War level throughout last year, and that the spending power of the mining community was not reduced. Moreover, customs revenue did not fall off by anything like the expected amount, and the Treasurer is therefore in a satisfactory position to start what he expects to be the last year of the present Administration

* * *

African City Properties Trust.

At the annual meeting of the African City Properties Trust held the other day in London, an interesting light was thrown on the position of the real estate market on the Rand. The Chairman described the past year as being a "successful" one, and went on to say: "The year ended 31st December last was a prosperous year in Johannesburg, although business in commercial houses was said to be rather dull. Still, our premises were well let throughout the year, there being practically no 'unlets,' and the rents were maintained if not increased. They were increased in many cases and there were hardly any cases in which they were decreased. As a result, we are able to suggest to you the payment of a dividend of 8 per cent. for the year an increase of 1 per cent. on that of last year, and you will have noticed by comparison with previous years that it is a steadily rising dividend. Our properties have increased from £582,678 to £645,155, an increase of some £62,000 in our income-earning properties. That is the result of our having completed two considerable buildings and the purchase which we made of the Marlborough House, in Eloff Street. This is a very fine block indeed; it cost nearly £60,000, and is acknowledged to be one of the finest and most substantial blocks in Johannesburg. The owners wished to retire, and after long negotiations we succeeded in purchasing it. To pay for this necessitated the withdrawal of large sums which we had on deposit, and the sale of some Government stocks, which you will see have materially decreased since last year."

* * *

Sheba Position.

The Sheba Mines are again attracting interest in London. Altogether they have yielded gold to the value of over £4,000,000, of which nearly £900,000 has been distributed in dividends, the bulk of it before the Boer war of 1899-1902. Fresh recent discoveries of a promising character have encouraged the board to carry out a third reconstruction of the company, with a capital of £300,000, in 5s. shares, credited as 2s. 6d. paid. The sum of nearly £150,000 which the 2s. 6d. liability per share will provide, is deemed sufficient to meet outstanding obligations and other contingencies and to extend the treatment plant with a view to restarting production next autumn. Treating 7,000 tons a month, it is calculated that at the current price of gold a profit of over £3,400 monthly should be netted. If the flotation process now being tested should secure the much-improved extraction of the gold contents of the ore which there is reason to hope it will do, this should fully compensate for any further relapse in the price of the metal towards the normal quotation of just under 85s. per fine ounce. At present the ore reserves are hardly more than a year ahead of the treatment plant, but we believe there is a great deal of virgin ground still to be developed.

* * *

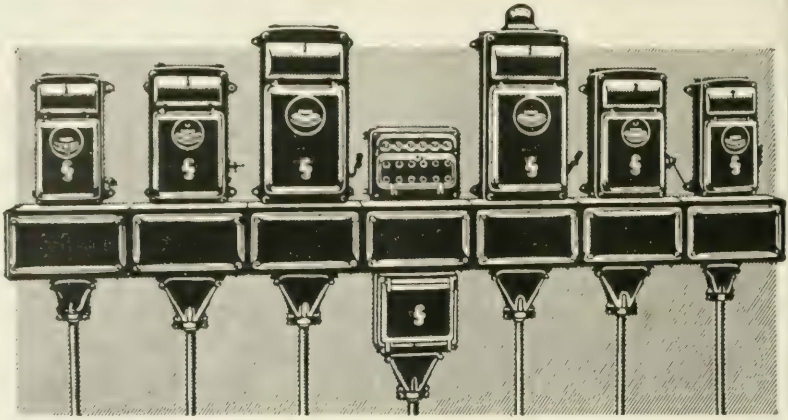
Dr. Hatch on Houtpoort.

Dr. F. H. Hatch, the well known mining authority, has made a very guarded report on the Houtpoort Company's properties in the South-Eastern Rand. He writes that "geological evidence undoubtedly shows that your Heidelberg properties are underlaid by the Van Ryn-Nigel formation." He adds the safe comment, "to what extent the conglomerate beds, characteristic of the formation, are developed on your properties can be proved by boring and at no great expense."

* * *

The Currency Conference Report.

Too late for notice in our last issue, the report of the Currency Conference was issued last week. The Conference has recommended that the return to a gold standard of the currency of the Union should be provisionally postponed to June 30, 1925. At the same time the Conference urges that the existing embargo on the export and import of gold bullion and on the export of gold coin should be removed. At first sight the intention behind this latter proposal is not very clear, although it is evident that the Conference has great hopes of a good effect upon the stability of the currency and exchanges. A little thought, however, will reveal the purpose that the Conference probably has in mind. Under the existing embargo system gold is exported from the Union and is sold in a free market. By arrangement between the Transvaal Chamber of Mines, the Bank of England, and the two Governments concerned, the output of the gold mines is sent to London and sold there to the highest bidder, who is allowed to take the gold he has thus bought to any country. With this exception, there is an effective embargo on the export and import of gold both in England and South Africa. By advising the removal of the embargo so far as South Africa is concerned, the Conference is endeavouring to put into practice a lesson that is taught by the history of the Greenback period in the United States. The experience of America was that the traders benefited to no small extent during that difficult time by shipping gold bullion and gold specie in payment instead of having recourse to the current rates of exchange. By means of such a subsidiary bullion currency, so to speak, the risks of sudden rises and falls in the exchanges were avoided, and a stabilising effect was produced. So long, however, as other countries maintain the embargo, the removal of South Africa's embargo is not likely to have much effect on the currency of this country, especially while that currency remains inconvertible. The proposal of the Conference to remove the embargo will, however, do this much good: it is a preliminary step towards a return to the gold standard, and as such it will not only prove to the world the sincerity of South Africa's intention eventually to re-establish a completely free gold market, but will also enhance South Africa's prestige. In addition, it must be admitted that, in so far as it will have any effect at all, the removal of the embargo will act upon the exchanges in favour of South Africa.



UNIT TYPE
IRON CLAD
DISTRIBUTION
BOARDS

SAFETY — CONVENIENCE — ADAPTABILITY — MODERATE PRICE
For 500 Volts, 3-Phase Work up to 350 Amperes.

SEND YOUR ENQUIRIES TO

C. KLEUDGEN, LTD.,
Corner of LOVEDAY and MARSHALL STREETS, JOHANNESBURG.
P.O. Box 1164. Telegrams: "KLEUDCO." Telephone Central 5435.

Kinghorn
Metallic Valves

SOLE AGENTS:
GEO. CRADOCK
—AND CO. (S.A.), LTD.—
75-77, CULLINAN
BUILDINGS.

P.O. Box 316. Telephone 539.
Tel. Add.: "ROPES."
JOHANNESBURG.

ROBINS CONVEYING MACHINERY PARTS

¶ A large stock of machinery is in transit from our American Works, and will soon be available for prompt delivery. It includes:

- Robins Conveyor and Elevator Pulleys.
- Robins Ball-and-Socket Bearings.
- Robins Rigid Bearings (*Standard and Extra Heavy*).
- Robins Solid Boxes.
- Robins Safety Set Collars.
- Robins Ball-and-Socket Take-ups.

¶ The following stock is on hand for immediate delivery:

- Robins Five-Pulley Troughing Idlers.
- Robins Solid-Shaft Return Idlers.
- Robins "Durabelt" Conveyor Belt.
- Robins Idler and Bearing Grease Cups.

¶ Prompt deliveries for import of other items of Conveying Machinery can be effected.

ROBINS CONVEYORS (S.A.), Ltd.
(Head Office: Robins Conveying Belt Co., New York U.S.A.)
BOX 4736, 'PHONE 4182, JOHANNESBURG

The South African Mining and Engineering Journal.

HEAD OFFICE: 176-180 Stock Exchange Buildings (2nd Floor), Fox Street, JOHANNESBURG, Union of South Africa.

Telephone **913.** P.O. Boxes **963** and **4573.**

Cables and Telegraphic Address: "MINING JOURNAL."

ANNUAL SUBSCRIPTION RATES: Oversea, £2; Union of South Africa and Rhodesia, £1 10s.; Local Delivery (Town only), £1 6s., payable in advance.

AGENTS FOR GREAT BRITAIN AND AMERICA: Argus South African Newspapers, Ltd., Byron House, 82-85, Fleet Street, London, E.C. 4.

Copies of this Journal are obtainable at all Branches and Agencies of the Central News Agency, Ltd., at all News Agents and Railway Bookstalls throughout South Africa, and at the London Agency as above.

CONTENTS.

PAGE
The Rand's New Mines ... 1287
The Union's Coal Trade ... 1289
West Springs ... 1291
Outside Districts:
Natal Asbestos ... 1293
Mr. Stuart Martin's Evidence ... 1295
Finance and Information for Investors ... 1297
Topics of the Week ... 1299—1302
Share Market ... 1303
Letters to the Editor ... 1304
Belgian Congo ... 1305
Trade and Industries Section:
The Week in the Mining Material and Engineering Trades... ... 1307
Company Meetings: Modderfontein B., E.R.P.M., Rose Deep, Geldenhuis Deep and Village Deep 1311

TOPICS OF THE WEEK.

The Premier an Optimist.

General Smuts has made an optimistic speech at Capetown on the future industrial development of South Africa. He thinks that after passing through the Monsoon the fair winds of prosperity are in sight and that we are on the threshold of a new era. The Prime Minister anticipates that by September the gold mining industry of the Witwatersrand will be working at its full and normal level again, and that the artisan class as a whole will by that time be reabsorbed. "Our trouble will rest with the semi-skilled and unskilled workers, who have thronged to the Rand in recent years," continued the Prime Minister. "The difficulty will be to supply work for them. The railway budget which is going to pass through this House and which is to provide for other avenues of development in this country, ought to be sufficient for every unemployed man, woman and child on the Witwatersrand. I think also that it would be to the advantage of the country to move away from the Witwatersrand at any rate part of the white population which has accumulated there in recent years. We quite agree in this House and in the country that the Rand is not the best environment for the people who flock there from the countryside without proper equipment for the conditions that await them there. The greatest kindness, the greatest service the Government could render these people is to take them away to irrigation works elsewhere, to place them in other colonies and get away from the surroundings which are very bad for them and worse for the country. I feel sure the chance will come in the next few months for the Government to do something on these lines with the assistance of Parliament, and so change the whole character of a problem which is facing us to-day. The movement is taking place as fast as possible. Hundreds are being moved away every month, but the permanent solution can only come when our programmes have been passed through Parliament and the Government can go ahead." General Smuts then proceeded to enunciate certain economic truisms which formed the main buttress of the Chamber of Mines' position when they took up their stand against the forces of Industrial Bolshevism early in the year. The Premier said: "The only problem with which we are faced is how sanely and reasonably to bridge the transition from the old South Africa to the new. We must bear in mind the great factor, which is that we have been hitherto primarily an industrial and agricultural country, and that both agriculture and mining in their essential interests required cheapness—not cheapness for their products, but cheapness of their conditions of work. The mines who work here sell in the market of the world at a price fixed by mining conditions, and if they are to have a chance they must work under the cheapest conditions in order to compete in the world's markets." It is good and cheerful reading in these times to observe that a man with the broad vision of our Prime Minister can see ahead of the shoals through which the ship of State is now being steered into the blue and unruffled waters of a splendid prosperity, and one is more than ever impressed with the captivating picture when one realises that the Prime Minister was not making a mere electioneering speech.

Preference for Copper: Messina Restarting.

General Smuts then went on to refer to the provision in the Union tariff that the Tender Board should give a 10 per cent. preference to South African industries in tendering for Government requirements and stated that the Minister of Railways had now extended his policy and was giving instructions in London that in calling for tenders for the requirements of the Railways in connection with electrification a preference should be given to South African copper. Instructions have been given to the High Commissioner in London in calling for these electrical tenders to give preference of £5 a ton to South African copper, and that preference should assist materially in helping some of our copper mines either to proceed, or where they have come to a temporary stop, to resume operations in South Africa. In this connection it is important to learn that the Messina Copper Company proposes reworking its mines in the vicinity of the Limpopo River in about two months' time.

The Iron and Steel Industry.

The Prime Minister next spoke of the Iron and Steel Industry, and in connection with this he made a highly important pronouncement on the subject of a bounty. He said: "Twelve years ago, when we took the first step a contract was made in connection with our railway scrap in order to give the iron industry a start at Vereeniging. There was considerable criticism of our procedure at that time, but the Government did so in the hope and in the belief that they were making a great contribution towards the establishment of this great basic industry in South Africa. Since then, other advances had been made, great reserves of iron ore of good quality have been discovered near Pretoria. It will be remembered that a contract was made recently for the development of these ores. In addition to this, a factory has been built at Newcastle. It is at present held back by want of working capital. I believe that that is the position also which has been reached by the enterprise at Pretoria. Our banks, following the English system of banking, do not invest their funds in industrial undertakings. They prefer to keep their assets in a liquid form, and from the banking point of view it is no doubt the proper thing to do; but in the meantime it is very difficult to find the proper capital both for capital costs and especially for working purposes, which is necessary in respect of our industries. And with the little beginnings at Newcastle and Pretoria are suffering from their capital and cannot make a step forward. The Government has not given up hope yet, and we are going to make a third attempt to establish an iron industry in this country. The Government has decided in principle to give a bounty to all iron and steel which is produced from our native South African ores. The iron and steel industry in Canada, which is to-day an enormous industry, was started with the initial advantage of a bounty which was given over a period of ten years, tapering off in the latter years until it ultimately disappeared. That is how Canada succeeded. That is what they are doing in Australia. As we have not been successful yet to found the iron industries of this country, we are resorting to this endeavour, which has been successful in other countries. We want to give a bounty over a number of years, say ten years, for all iron and steel which is produced from our native ores. I hope it will be possible to start what will be really a key to the industrial development of South Africa in the future."

That "Infamous" Agreement.

The Mining Journal, whilst congratulating the Government on at last deciding to give the prospective iron and steel producers of the country a fair and straightforward deal, without favour or prejudice, would like to point out that there is at least one inaccuracy in the Prime Minister's statement, and that one or two facts which have just been lightly touched on call for criticism. It is stated, for instance, that our banks do not invest their savings in industrial undertakings. But the National Bank, although it had not "invested its savings," has lent the South African Iron and Steel Corporation a large sum of money. In other respects, too, the enterprise born as the Pretoria Iron Mines has received preferential treatment, notably in respect of the infamous agreement entered into between the Railway Administration and the Corporation. The Pretoria venture requires two or three millions sterling to complete its ambitious project whereas at Newcastle the blast furnace is completed and a comparatively small sum only is now required to put the Northern Natal works on a sound footing. We note, as General Smuts said, that the Government is now going to make a third attempt to establish an iron industry in South Africa, and we earnestly recommend the Government to commence its third effort with a clean slate, to rescind the foolish document signed by the Government with that Industrial Fiasco, the Iron and Steel Corporation of South Africa, and in its new endeavour to act in a fair and square manner and not to be intrigued into preferences by people who talk big but are either unable or unwilling to carry out their obligations. We have reason for believing that the British Iron Masters, in conjunction with a South African Financial House, have in prospect a big project for the development of our iron and steel industry. But that industry can make no headway so long as enterprise is handicapped by State preferences in favour of certain individuals.

"I hear thee speak of a Better Rand."

Some people are very sceptical as to the results which may accrue from the Mining Industry Board. Generally speaking, we have been disappointed in the translation of Commission recommendations in the past but in regard to this particular Board of Enquiry, the Prime Minister, at any rate, believes that good will result from its deliberations. In his glamorous speech in the House of Assembly the other day, General Smuts remarked: "The industry has the chance to-day to reorganise itself on a really efficient basis. The charge against the mining industry which was made by the workers was that the industry was top-heavy and inefficient, and that the country was suffering because of these conditions. It is now possible, after the storm we have passed through, to reorganise that industry on a sound basis, and I hope that the Commission which is now sitting will contribute very materially to that end. The result will be that the mining industry of South Africa as a whole will enter a new era of development if we make the best of the opportunities we have to-day. The gold mines will enter upon a new era and a new lease of life and there will come prosperity not only to those immediately concerned, but to everyone else outside. The gold industry had a very fine prospect before the recent trouble, but there should be no reason why that should not occur again. I am hopeful that with reorganisation and the reduction of working costs nobody will be permanently out of employment, but that also we shall see fresh employment opening out in many directions." These hopes for a better Rand certainly seem to be materialising to-day. But they are materialising rather on account of the actual achievements of the mines and not because of any magical influence which the Industry Board can exert upon the gold-bearing conglomerates. We believe that the May returns will be eminently satisfactory. We hear, for instance, that one of the large Far East Rand high grade mines is this month crushing 90,000 tons with working costs in the neighbourhood of 19s. per ton. Development faces, too, are generally looking better. At the Modder East, for example, the position has improved as was clearly indicated by Sir Evelyn Wallers at the Modder B meeting, and at West Springs after a long and weary period of searching for good values ore of a satisfactory grade has, so we hear, at last been encountered. We are not in the least surprised at these good bits of news. We have always anticipated that after the satisfactory decision of the battle for lower working costs, and the settlement of the enemy shareholding deal that quite a number of drives would speedily penetrate into chutes of better value.

Professor Lehfeldt's Evidence.

On Monday, Professor R. A. Lehfeldt was examined before the Mining Industry Board on a statement which he had submitted to that body. Replying to Sir William Solomon, the chairman of the Board, Professor Lehfeldt said he had put his memorandum forward because it contained one definite suggestion. What is that suggestion?—It is a suggestion that the Government should make an experiment in the employment of white labour. In the course of evidence I heard as a member of the Unemployment Commission, I was struck with the conflict of testimony as to what can be done with white labour in unskilled occupations. You will find a very large opinion in South Africa that it does not pay to employ a white man in work that can be done by natives. Then you get very positive assertions that certain experiments have been tried, and proved successful. Professor Lehfeldt referred to the report of the Mining Industry Commission of 1907-8, which made positive statements as to the cost of tramming and shovelling, and various other branches of unskilled work done by white men compared with the same work done by natives. He also referred to experiments on railways in construction of earthworks done by white men. He was told that men working in the Lydenburg district on purely manual work were doing fairly well. They were doing piecework and making often 10s. a day, or more. Mr. Stuart Martin, whose valuable evidence appears elsewhere in this issue, told the Commission that he thought nothing of Professor Lehfeldt's suggestion. He characterised it as a mere waste of money.

Dissatisfied Developers.

Amongst mine employees who are specially dissatisfied with post strike conditions are the developers who talk of forming an association of their own for the protection of their interests. Before the Mining Industry Board on Monday afternoon three developers on the New State Areas, Messrs. R. A. C. Edwards, H. C. V. Seymour and R. J. Wagner, appeared to give evidence regarding the reduction in their earnings under the new contract system. In reply to Sir William Solomon, chairman of the Board, the witnesses (one or other of them) said their personal experience was that the difference in the earnings between the new and the old contract was 60 per cent. at least. Under the new contract they were earning 30s. to £2 a day, including the guarantee of 15s. and 2s. 3d. cost of living allowance. "Under the old contract," said one witness, "I used to earn anything from £90 to £120 a month, about £4

10s. to £5 a shift. The earnings varied according to the capabilities of the men." Sir William: We were told that as much as £200 a month was earned. I have only heard of one case. From £100 upwards was quite a common thing?—Quite a common thing on the Far East Rand Mines. In further evidence the witnesses said they were cut more than any of the other workers. They maintained that developing was a very highly skilled occupation; they estimated the average working life of machine men at only nine years, and they considered therefore they were entitled to the higher pay. Sir William Solomon: We understood that conditions have very much improved, and that there is no serious risk now of contracting silicosis. "I don't think I am alone in my opinion," said one witness, "that the risk of silicosis will never be removed in the mines. It is not so great as it was, but it has not been so greatly removed as some of the heads of the industry would have us believe." The witness further said that under the present no cost contract system, if he broke 200 feet a month and he got all the top bonuses, the most he could make was £52 a month. "You don't think that is a sufficient wage considering the risk that is run?" the witness was asked. "I don't," was his reply. In the course of further examination Sir Robert Kotze said it was time the illusion that all men contracted phthisis was dispelled. What the figures stated was that the average period in which men got phthisis was eight years, but the majority of the men did not get phthisis.

Hasty Mining Legislation.

A special issue of the *Government Gazette*, dated May 15, contains, *inter alia*, the draft of a Bill known as the Transvaal Precious and Base Metals Act Further Amendment Bill. Its appearance has evoked a protest from the Chamber of Mines on the ground that it has been introduced into Parliament without sufficient time for its consideration having been given to the interests chiefly affected. It will be remembered that by one of its clauses, as already wired up from Capetown, the Government relinquishes its share of claim licences under certain conditions. This it would seem, has been designed to please the "small man," but, to our surprise, we find that this benefit conferred by the Bill is so hedged round with restrictions that the people most concerned do not welcome it. Several objections to the form of the measure have already been despatched to Capetown and the debate on the Bill will reveal considerable room for improvement in its provisions. In view of the protests from all quarters, particularly from those who might be expected to benefit from it, the progress of the Bill through the House is likely to be delayed.

Modder "B." Prospects.

Sir Evelyn Wallers presided at the annual meeting of the Modder "B" last week, and emphasised the heavy losses caused by the strike. April month had, however, shown "a considerable improvement." Although in common with all other mines on the Rand, the native labour supply of the Modder "B" still remained depleted forty thousand tons were milled at a yield of 10·3 dwts., with a reduction of working costs to 25s. 2d. per ton milled, as against 26s. for the year 1921. "From now onwards," said the chairman, "it is hoped that steady progress will be made towards efficiency, and that an appreciable reduction in working costs will be achieved during the remaining portion of this year." Development results generally are said to be improving, and the portion of the chairman's speech dealing with this subject is of special interest. He said: "The south-west section continues to be the area where the bulk of the payable ore is contained. Although for a time the values were more erratic than during the previous year, you will be pleased to observe that during the last quarter of the year there was a steady improvement at several points. The development accomplished in the north-eastern section of the mine amounted to 5,926 feet, of which 2,950 feet disclosed reef. Of this, 44·7 per cent. was payable, averaging 412 inch/dwts., and the general conditions in this section, although much of the development work accomplished must be regarded as of a preliminary nature, are not very encouraging."

The Position of the E.R.P.M.

It is a matter for surprise and congratulation that the E.R.P.M. managed to weather the recent storm. No mine on the Rand had a narrower escape from closing down, and the direct loss to the company has been written-off as £147,560. Sir Harry Ross Skinner, who presided at the annual meeting of the company last week, described the position in detail, and a full report of his speech appears in this issue. Dealing with the future of the mine, the chairman hoped that by the reorganisation of the mine on sounder lines, which is now possible, working costs will be gradually reduced to a figure which, with reasonable good fortune in development, may enable the mine to continue operations even with gold at the normal price. The chairman did not hesitate to add that unless much was done in the direction of more economy and efficiency "the end is close at hand." He went on to show that when gold came back to normal it would be necessary for the mine to get below even pre-war costs, and he hoped that the premium would remain long enough to enable them to put their house in order. This is certainly a very plain statement of the position for all concerned to take to heart.

Village Deep's Improved Outlook.

Mr. E. G. Izod's speech at the annual meeting of the Village Deep this year was of unusual interest, in view of the critical time the company has recently experienced. A full report of the speech appears in another part of this issue, and its tone, on the whole, will be found reassuring. To satisfy the natural curiosity of shareholders, Mr. Izod described the outlook as fairly bright, recalling that though in December last the question of closing down had been before them, there were now "good prospects of making profits, even should gold go down to its standard price." As regards development, Mr. Izod said that grade was keeping well up to normal, and indications are that it should be maintained as development proceeds. Mr. Izod ended his speech on a note of hope. "We look forward with confidence to a bright future, and if only our employees will frankly realise that their welfare is indisolubly bound up with the prosperity of the company then our anticipation will be realised."

Geldenhuis Deep's Future.

The Geldenhuis Deep furnishes perhaps the most striking example of the plight of the low-grade mines. Last year it was only saved from closing down by the gold "premium" and with that aid falling-off, as the chairman, Mr. Mullins, said at the annual meeting, "it is patent to all of us that unless a great reduction in costs is effected the mine cannot continue working." The conditions under which the mine resumed working after the strike were such, however, that the board is hopeful of being able to reduce working costs to meet the continuing fall in the price of gold. In the interests not only of the shareholders but of the whole community we can only hope that this confidence will prove justified, and that not only the Geldenhuis Deep but all the poorer mines may be saved by the reforms now being introduced in the Rand.

Rose Deep Prospects.

"A typical low-grade proposition" was the description of the Rose Deep by the chairman, Mr. F. Raleigh, at the annual meeting this week. A report of Mr. Raleigh's speech appears in this issue, in which will be found a detailed review of the difficulties the mine has had to encounter. How serious the position is may be judged from the chairman's statement that "at to-day's price of gold, the working costs of last year would not permit of any profit being earned by the company." Mr. Raleigh showed that the directors had done everything possible to secure low working costs, and it now remains with the Government and the workers to realise their responsibilities by enabling the company to work the greatest tonnage possible.

Diamond Industry Prospects.

Sir David Harris, in the course of the Budget debate in the Assembly last week, had something of interest to say in regard to the diamond market, and his remarks were supplemented by Sir Ernest Oppenheimer and Mr. H. C. Hull at the annual meeting of Consolidated Diamonds. These pronouncements are particularly noteworthy at a moment when all eyes are anxiously scanning the horizon for signs of a revival in the market for the stones. In the course of a vigorous protest against the unscientific export tax on diamonds, Sir David Harris said that Brazil, British Guiana and the Congo—and the Congo was a very large and important diamond producer, turning out probably about a million pounds worth of stones a year—did not pay any export duties; it was true they paid taxes on profits, to which he did not object. All the diamonds produced in these countries came into competition with the diamonds mined in the Union, and naturally these outside diamonds were produced cheaper than ours, and this placed our own industry at a disadvantage. He said that this export duty on diamonds would delay the revival of the market so far as the South African diamond industry was concerned. The State should only tax profits. When it taxed a commodity produced in this country, which must be exported, because it was not consumed in South Africa—he did not suppose £20,000 worth of diamonds were consumed in South Africa annually—it would not encourage people to invest money in development work. Sir Ernest Oppenheimer, at the Consolidated Diamond meeting, was more hopeful and definite in his anticipations than the spokesman of De Beers. He believes that the current year will witness a revival in the diamond market, and he hoped by this time next year to have a better report to present to the long-suffering shareholders. Sir Ernest's actual words merit putting on record: "Information from London indicates that the stream of Soviet diamonds has almost ceased to run. Taking this into consideration, and also the fact that the stocks of diamonds now held in America, our chief customer, are small, I think we are justified in expecting a partial revival in the diamond trade. I do not wish to convey that sales will assume the proportions they attained, say, in 1919 and 1920. Such an assumption would be much too optimistic, as the sales of large quantities of diamonds can, I think, only occur when the world has more nearly recovered from the losses sustained during the war, and when more stable economic conditions have resulted in a general trade revival. I do think, however, that we may confidently anticipate a partial revival in the diamond trade." The chairman of the company, Mr. H. C. Hull, supported Sir Ernest Oppenheimer's opinion, and said there appeared to be a better tendency in the diamond market. The directors had under consideration the possibility of resuming production during the current year, if the improvement in the diamond market was maintained. Revivals in the diamond market are wont to come, of course, when least expected, and for the present we must content ourselves to live in hope based upon the views of those best qualified to judge the prospects of the industry.

Tanganyika Concessions.

At a meeting of shareholders held in London the other day a resolution was passed increasing the capital to £3,500,000 by the creation of 1,300,000 £1 shares. The managing director, Mr. Robert Williams, gave details of negotiations which had been undertaken in view of the possibility of Rhodesia entering the Union, and dealt fully with the Benguella Railways, of which he presumed General Smuts recognised the necessity in the event of a big scheme of Rhodesian development maturing. According to the version of his speech as cabled out to South Africa, Mr. Williams made no reference to the Kasai Railway project of the Belgians, which will have a most important bearing on questions of trade and transportation in Central Africa.

Notes & News.

Hasty Legislation.

The following telegram was dispatched on Monday by the Transvaal Chamber of Mines:—"From Chamber of Mines to Prime Minister, Capetown. The Chamber of Mines again respectfully protests most strongly against the procedure adopted by various Government departments of placing Bills before Parliament, sometimes for second reading, before important interests in the State most vitally affected by those Bills have had an opportunity of examining the Bills, and if necessary suggesting alterations to Parliament. As examples, the following Bills vitally affecting the mining industry are cited: Precious and Base Metals Act Amendment Bill, read first time May 10. Copy of the Bill reached the Chamber on May 16, after a telegram to the Mines Department, the second reading being down for May 17. Electricity Bill, introduced May 11. Copy only reached the Chamber on May 17. It is clearly a matter of the greatest national importance that important Bills of this description should not be rushed through Parliament without an opportunity being given Parliament to know the views of the important interests affected by such Bills. The Chamber respectfully urges that reasonable opportunity be given for the examination of such Bills by parties affected. It is intended to publish this protest."

* * *

"The Star's" Supplement: A Valuable Compilation.

Our evening contemporary *The Star* issued on Tuesday a special supplement of 24 pages, which deals authoritatively and interestingly with finance, trade and industry in South Africa. The supplement, which is well got up, enables one readily to focus the points made in their correct statistical perspectives. *The Star* supplement constitutes in fact a valuable industrial, financial and statistical guide to the land we live in. Articles on the Rand, the base metal mines and collieries, wool and mohair, hides and skins, butter, cheese and eggs are all written by experts in a lightly technical and easily understood manner. There are many valuable statistical tables and graphs. The supplement breaks new ground in the enterprise of daily newspapers in this country. The numerous excellent articles on imports and exports, railways and harbours, banking, currency, the fruit and wine industry, the gold mines, are well written, and we congratulate all who have been responsible for this publication upon the very valuable addition to our evening newspaper which they have produced.

* * *

Swaziland Gold.

The well-known Black Diamond Creek Concession, just inside the Swaziland border, is now, after lying fallow for many years, about to be exploited. One shaft is down 60 ft. and another to a depth of 120 ft. Treatment in the past by crude methods yielded about an ounce of gold to the ton, the slimes alone giving 9 dwts. Recent assays have given up to 8 oz. to the ton; but the new proprietors are calculating on the lowest values obtained at an average of 2 oz. to the ton, and they estimate that they can develop almost at once 14,000 tons of 2 oz. rock. Representatives of the small Johannesburg syndicate, which has taken over the property, are proceeding to the property forthwith to dewater the mine and to sink further on the reefs. The property, which has been acquired on very favourable terms, shows other reefs of a payable nature and also a fair amount of alluvial.

Rand Water Board Loan.

We understand that as the result of negotiations with London, the Rand Water Board has arranged to issue a loan of £400,000 at £93, carrying interest at 5 per cent. The terms of issue are very favourably regarded, and the rate of interest is certainly satisfactory. This sum will enable the Boad to complete payment for the Vaal River barrage and the new scheme for taking 5,000,000 gallons day from that source.

The Week in the Sharemarket.

AN IMPROVING TENDENCY—GOOD EFFECTS OF PRIME MINISTER'S SPEECH AND SETTLEMENT OF ENEMY SHAREHOLDINGS.

The Share Market exhibited a very healthy appearance before closing for the Wednesday and Thursday holidays. General Smuts's optimistic speech created a bullish tendency, and the settlement of the long-standing question of the disposal of enemy shareholdings has, of course, conspired to improve matters.

	Fri. 19th.	Sat. 20th.	Mon. 22nd.	Tues. 23rd.
Anglo American Corporation	21 0	20 9*	21 6	21 7½
Aurora Wests	3 0*	3 0*	3 0*	4 6*
Bantjes Consolidated	6 3*	6 3*	6 3*	6 9*
Brakpan Mines	19 0*	19 6*	19 6*	19 0*
Bushveld Tins	0 3*	0 4*	0 4*	0 4*
Cinderella Consolidateds		2 4*	2 3*	2 4*
City and Suburbans	2 2*		2 2*	2 3
City Deeps	44 9*	44 6	44 6	45 3
Clydesdale Collieries	21 6*	21 6*	22 6*	22 9*
Consolidated Diamonds	14 6*	14 0	14 3	15 0
Consolidated Investments	—	25 0*	26 9*	26 0*
Consolidated Langlaagtes	14 3	14 6	15 0	14 6*
Consolidated Main Reefs	10 10½	11 6	11 3	11 3
Consolidated Mines Selections	12 0*	12 9*	12 6*	12 6*
Coronation Collieries	31 0*			
Coronation Freeholds	0 6*	0 7	0 7*	0 7*
Coronation Syndicates	4 8*	4 3*	4 9	4 9
Crown Diamonds	6 0*	6 3	6 3	6 3*
Crown Mines	—	—	38 0*	38 0*
Daggafontein Mines	2 10*	2 10*	3 0	3 0
East Rand Coals	1 6*	1 6*	1 6	1 6*
East Rand Deeps	0 9*	0 9*	0 9*	0 9*
East Rand Minings	11 6†		12 0†	—
East Rand Proprietary	6 6	6 9	6 9*	7 0
East Rand Debentures			—	£85*
Eastern Golds	0 9	0 7*		0 7*
Frank Smith Diamonds	3 7	3 7*	3 7*	3 9
Geduld Proprietary	57 0	56 9	57 3	58 9*
Glynn's Lydenburgs	15 6*			15 0*
Government Areas	87 0*	87 0	87 6	87 9
Hume Pipes				14 0*
Knight Centrals	4 1*	4 1*	4 1*	—
Lace Proprietary	7 6*	7 6*	7 10*	7 9*
Leeuwpoort Tins	6 3*	6 0*	6 6*	6 6*
Luipaardsvlei Estates	2 6*	2 6*	2 6*	
Lydenburg Farms	5 6*	5 0*	5 1*	5 1*
Meyer and Charltons	67 6*			60 0*
Middelvlei Estates			1 9†	
Modder B.'s	31 9*	31 9	32 3	32 3
Modder Deeps	43 6†	43 6	43 9	43 6
Modder Easts	8 0	8 1½	8 4	8 8
Natal Navigation Collieries	31 0*	31 0*	31 6*	32 0
National Banks	200 0*	200 0*	205 0	210 0*
New Eland Diamonds	25 0*	25 3*	25 0*	27 6
New Era Consolidated	6 1*		6 3	6 1*
New Geduld Deeps	1 6	1 5*	1 5*	1 5*
New Kleinfonteins	6 3	6 3*	6 6	6 6
New Modderfonteins	75 9	75 0	75 0	76 3
New Unifieds	4 6†	4 6†	4 9†	—
New State Areas	30 9	32 3	33 0	32 6
Nigels	5 0*		5 0*	5 0*
Nourse Mines	13 0	14 0	14 9	14 9
Pretoria Cements	15 6	15 0*	15 0	15 0*
Rand Collieries	1 3*	1 0*		
Rand Mines		47 6*		47 6*
Rand Nucleus	1 1*	1 1*	1 1	1 1*
Rand Selection Corporation	50 0†	50 0†	50 0†	50 0†
Randfontein Centrals		10 6*		11 0*
Randfontein Estates	17 0*	17 3	17 10½	18 0
Rouxville Diamonds	1 0*	1 0*	1 0*	1 0*
Roberts Victors	7 6*	7 9*		8 0
Rooibergs	3 0	3 0*	3 0*	3 4*
Ryan Nigels		4 0†		3 0*
Simmer and Jacks	3 0*	3 0	3 3	3 2*
South African Breweries			26 0*	
Springs Mines	44 9	44 0	44 6	45 0
Sub-Nigels	11 6*	11 9†	11 3*	12 0
South African Alkali		15 0*	14 9*	15 6†
South African Townships	8 9*	8 9*		8 9*
Transvaal Lands	16 0*	—	—	—
Transvaal G.M. Estates	10 0	10 3	10 6	10 9
Transvaal Silvers	17 0		16 6	16 3*
Tudors			0 8†	0 8†
Vany Dyks	1 1*	0 9*	—	1 0
Van Dyk Deeps	68 6	68 3	68 0*	68 0
Village Deeps	9 9*	10 6	11 0	11 6*
West Springs	9 7½	9 9	11 0	10 7
West Rand Consolidated		3 6	3 4*	3 9*
Western Rand Estates	3 9*	3 9*	3 10*	3 10½
Witbank Collieries	39 3*	39 3*	39 3*	39 0*
Witwatersrands	11 0*	12 0	12 0*	13 0
Witwatersrand Deeps	10 9	11 0†	12 0†	9 6
Zaaiplaats Tins	2 1*	2 3*	2 3*	2 3*
Union 5 per cent.	£102*	£102*	£102	£101*

* Buyers. † Sellers. a. Odd lots. b. Ex London.

An Improved Furnace for Cast Iron.

In every foundry throughout the world the cupola furnace is accepted as the standard to be used on account of its low first cost, its economy and its convenience. Such drawbacks as it possesses are not of serious importance in ordinary foundries, but they do become troublesome when high grade work is undertaken. A British firm has therefore devised a special type of cupola furnace for the production of the highest grade of castings. The chief peculiarity of this furnace lies in the oil firing of the receiver. The molten metal collects in the hearth of the receiver and the power of the oil flames can be regulated to suit the quantity of metal concerned. In this way any quantity of metal can be maintained for a long time at the correct casting temperature. The approximate consumption of oil is at the rate of three gallons per ton of metal.

OSBORN'S
HIGH-GRADE
—TOOLS—

TWIST DRILLS, FILES, PICKS,
SHOVELS, SAWS, HACK-SAWS,
HAMMERS, STONE FORKS, Etc.

SPECIFY
"OSBORN'S"
AND GET THE BEST.

SAMUEL OSBORN (S.A.), LTD.
Box 3162. 'Phone 4673.
JOHANNESBURG.
Works: CLYDE STEEL WORKS, SHEFFIELD.

Letters to the Editor.

STEAM v. PETROL TRACTORS.

To the Editor, *S.A. Mining and Engineering Journal.*

Sir,—Re the article in your journal appearing under the heading "STEAM v. PETROL TRACTORS," of your issue dated the 18th March last. We would be glad if you would be so kind as to give us the opportunity to reply to this article, by doing so you will be serving the interested public. The person writing the article seems to have the opinion that there is only one type of vehicle, viz., petrol driven, that ought to be allowed to run in the country. We think readers after perusing the following remarks will form a different view.

We will answer the items called *Disadvantages*, separately and leave the public to form an opinion.

1.—*High Capital Investment.*—Taking the total carrying weight for complete Steam and Petrol vehicles, if the price is higher for a steam vehicle (we are under the impression that it is considerably less for the same carrying or tractor purposes) it is justified by having at least a 20 per cent. longer life with more economical running which is admitted by the writer of the article referred to—which proves that for the capital outlay employed, the steam vehicle price could be 40 to 50 per cent., and still be able to compete with petrol.

2.—*Difficulty in finding a competent Steam Engineer to operate the vehicle and replacing men when on vacation or leaving job.*—There is no difficulty whatever in this respect, as in Great Britain, India, and other countries, where steam vehicles are well known, an uneducated horse-driver can be trained to drive one of these vehicles, and left in charge of same after receiving a week's instructions, and again as time goes on the man can easily educate himself into a driver-mechanic to do his own adjustments, because such adjustments are so easy to accomplish compared with a petrol vehicle, and its intricate and delicate mechanism.

3.—*Work is very distasteful to the average mechanic, due to the machine being cumbersome, awkward to steer, extremely hot in warm weather, dirty, and disagreeable.*—Driving a modern steamer is no more distasteful to the driver than working a petrol machine, it being quite as easy to steer when fitted with centrally pivoted front wheels and Ackermann steering gear, in place of the obsolete chain worm and worm wheel type of steering; in fract, by the adoption of centrally-pivoted front wheels steering, the steamer is easier to manipulate than the modern petrol vehicle.

In hot weather there is very little difference between a steamer and petrol, because the boiler is lagged completely, as against the petrol engine getting extremely hot, as will be noted by so many of them running with the bonnets off in warm weather, which precaution if they did not take would cause seizure of the engine, and possibly a general smash up. This is impossible with a steamer, because the warmer the engine gets, the more efficient it becomes, given a modern type upon rubber tyres, men can easily be found to drive same which disproves the points raised by your correspondent.

4.—*Very hard on Tyres, necessitating great expense in replacement.*—The very opposite is the result. A steamer is lighter upon tyres than a petrol, being due to the fact that they are over-tyred, in the first instance; also, there is greater flexibility in starting, stopping, reversing, and getting out of difficult places with the engine than with the petrol.

5.—*Large proportion of load capacity of vehicles used up in carrying fuel.*—The modern steamer is quite capable of taking fuel over a 120 miles range without interfering in any way with the carrying capacity.

6.—*Vehicle very hard on roads.*—This is a doubtful matter, because admittedly it is slightly heavier than a petrol vehicle; but by fitting larger wheels, broader rubber tyres, and superior springing, it causes, in our opinion, no more damage to the road than its competitors.

7.—*Where heavy grades and long distances are covered it is necessary to have a supply of water every few miles.*—Where gradients are concerned, the steamer can "lick the head off" of any petrol vehicle made (note a heavy petrol lorry labouring up a long and steep gradient on a hot day), and so far as water supply is concerned under the worst road conditions they carry sufficient water for 18 to 40 miles, surely sufficient for all reasonable requirements.

8.—*Extremely heavy on mechanical maintenance.*—This again is the reverse to facts, whereas with a petrol vehicle, owing to its intricate mechanism, carbonization, magneto, carburetter, and a hundred and one little details, these require constant attention and adjustment. It is a well-known fact that steamers have been at work in Great Britain, whose records show that on three or four years working' £50 will cover their maintenance.

9.—*Vehicle very dirty, etc.*—Throughout the world and particularly in Great Britain it rather discounts this, more by the thousands of vehicles engaged in the transport of flour, provisions, furniture, cotton, manufactured goods of all classes, which make your correspondent's statement appear absurd.

10.—*It takes three-quarters to one hour, etc.*—Various methods can and are used to prepare the steamer for the journey in less than half the time stated by your correspondent.

11.—*Municipal Regulations against use of steamers.*—On whose authority has your correspondent made such a statement regarding municipalities? Municipalities in Great Britain are very keen on employing steamers, because of their economical working, upkeep, and efficiency in every way.

It is quite evident to us that your correspondent is very biased upon American trucks, which accounts for the statement, that no steamers are used in the U.S.A. The fact is, steamers are used in the U.S.A. and Canada, but not in such numbers as in other countries, because petrol and gasoline is very cheap there.

The best reply to your correspondent—is that before very long he will see large fleets of steamers at work throughout South Africa, as such vehicles when dealing with loads from 3 tons upwards are far superior in every way to any petrol wagon or tractor made, which fact in the near future he will no doubt acknowledge.

The approximate running costs of steamers is 3d. per ton mile, and petrol vehicles about 9d. per ton mile. What a saving over a year's working! We understand the S.A. Railways have had extensive tests in the past as between steamers and petrol transport over a number of year's and that they have definitely come to the opinion that steamers are more economical to run than petrol.

Mr. Editor, you will agree after persusal of the foregoing that it is only fair to your readers that this reply be published in your valued journal to set right any misunderstandings that may have been set up in their minds with regard to the relative merits of steam v. petrol. Thanking you, sir, we are, yours faithfully,

BELL & GIFFORD,

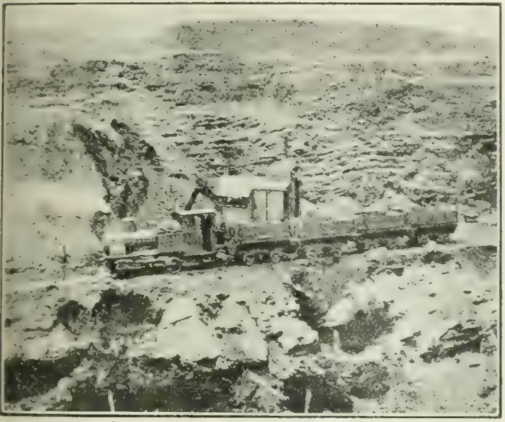
South African Agents for the Yorkshire Commercial
Motor Company, Leeds; Yorkshire Steam Wagons &
Tractors (per D. Gifford).

BELGIAN CONGO.

BELGIAN CONGO NOTES.

Katanga Rail Routes.

Mr. Camus, manager of the Grand Lacs Transport Company, which is responsible for transport on the Congo River and the Great Lakes, gave some interesting information in a recent contribution to "Le Mouvement Geographique." Mr. Camus offered comparisons between the existing transport route rates, and the figures tend to substantiate my opinion that, given anything like proper handling, the Northern routes will be dangerous competitors to the Southern line. Naturally, with the advent of a period of railway development, rates for the transport of constructional material are of first importance. The points Sankishia-Bukama will be the base camps for the construction of the new Kasai railway from this end, and Mr. Camus gives the rates to that section. From Beira-Sankishia he arrives at a total of fcs. 915.20, made up as follows: Beira-Mashonaland Railway, 636 francs; Chemin de Fer du Katanga, 279.20 francs. From Boma-Sankishia he gives a total of 559.70 francs, and for Dar-es-Salaam to Sankishia 525.65 francs. It will thus easily be seen that the Northern routes are very considerably lower than the Southern. The latter, of course, has a very great advantage in the matter of "trans-shipment." Material loaded at Beira can be run through direct to Sankishia, whereas the Dar-es-Salaam route means transport over rail from Dar-es-Salaam to Kigoma, boat from Kigoma to Albertville, rail from Albertville to Kabalo, boat from Kabalo to Bukama, and rail again from Bukama to Sankishia. The Boma route is even more formidable, being rail from Matadi to Kinshasa, boat from Kinshasa to Stanleyville, rail from Stanleyville to Ponthierville, boat from Ponthierville to Kindu, rail from Kindu to Kongolo, boat from Kongolo to Bukama, and rail from Bukama to Sankishia. Still, there is no doubt that the considerable difference in tariffs will have a great bearing on the purchases to be made. In connection with the transport of palm oil, cotton, timber and rice, the Boma route is shown by Mr. Camus to be more advantageous. It is therefore not difficult to see why the Belgian authorities are doing their utmost to equip their own routes with modern machinery and to raise the standard of efficiency.



Steam Shovel at Work in Katanga.

* * *

M. Franck, the Belgian Minister for Colonies, gave some interesting information to pressmen recently. Speaking on the question of the Kasai (or, as it is also known, Bas Congo-Katanga) Railway, he said: "I have just given the instructions which will mark the commencement of the construction works for the railway. The difficulty has been to find a really good terminus port. The original idea was to use Djoko-Punda on the Kasai River, but this point is very inaccessible. Two survey parties carried out investigations on the spot, and as a result of their findings Ilebo, a point on the Kasai River some 30 kilometres south of the confluence with the Sankuru, has been chosen as the terminal port. Ilebo can be reached all the year round by boats of 500 tons, whereas at Djoko-Punda at certain parts of the year it is impossible to navigate with small boats of only 25 tons. At Ilebo 800 mètres of deep water wharves can be built, and the railway decline to the port is only 15 mm. From the Katanga end, the terminal port will be Bukama and not Sankishia as originally intended. Bukama is the junction of the Katanga Railways and Grand Lacs Company systems. The laying out of the new line will be commenced immediately, and it is estimated that the constructional work will take six years. It will thus be finished at about the same time as the new plant of the Union Minere is expected to commence production." It will be seen from the remarks of the Colonial Minister that Belgium is fully alive to the value of the Congo and the potential wealth the country contains.

* * *

Official statistics show that there are 125,080 native workers recorded for the four provinces of the Colony, divided as follows: Katanga, 35,826; Province Orientale, 28,147; Congo-Kasai, 42,915; Equator, 18,192. It is in the Congo-Kasai division that the Forminiere Diamond Mining Company operates.

JUST PUBLISHED.

PROVISIONAL

Geological Map of Southern Rhodesia.

On one sheet measuring 33 by 35 inches.

Scale 1 : 1000000, or about 16 miles to one inch.

Showing the geological formations in 12 colours, sites of the principal mines, railways, rivers, etc. Compiled by the Geological Survey of Southern Rhodesia, and sold at the Mining Commissioner's Offices in Bulawayo, Gatooma, Gwelo, Salisbury, Umtali and Victoria.

Price £1 (postage to the Union 1/1 extra).

HADFIELDS Ltd.

Workmen employed during the war, over 15,000.

East Hecla and Hecla Works, Sheffield, England.

Works area over 200 acres.

TRADE HECLA MARK DISC CRUSHER.

(SYMON'S PATENT).

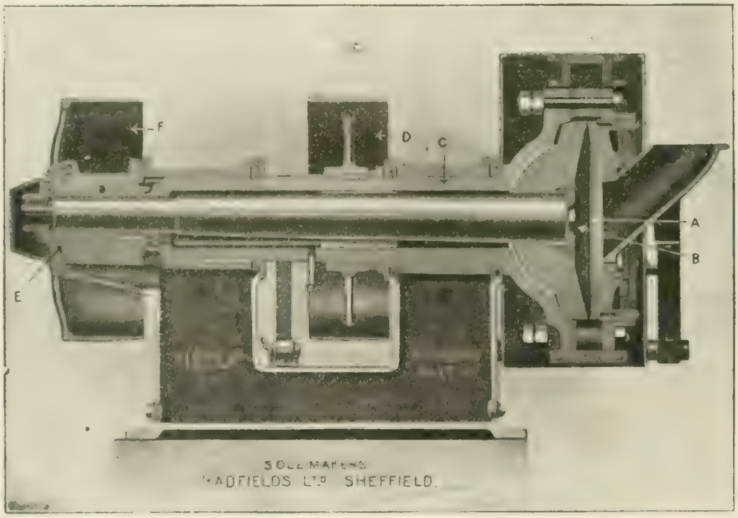
THE CRUSHER that excels in output, in economy of power, in uniformity of product, and in low cost of maintenance. WRITE FOR CATALOGUE.

THE ONLY CRUSHER

that reduces ROCK and ORE, WET or DRY, successfully to a smaller product.

MAKERS OF THE BEST KINDS OF

STONE BREAKING AND ORE CRUSHING PLANTS.



SOLE MAKERS OF

HADFIELDS' PATENT

ERA
Trade Mark

MANGANESE STEEL.

The Supreme Material
For the Wearing Parts of Stone
Breaking & Ore Crushing Machinery.

Head Office for South Africa:

46 & 47, CULLINAN BUILDINGS,
JOHANNESBURG.

'Phone 5900. P.O. Box 1009.

Tel. Add.: "HECLA."

Stores: DENVER, TRANSVAAL

(Adjoining Denver Station).

Bulawayo Agents:
WHITMORE & JACKSON,
17 & 18, Agency Chambers.

Salisbury Agents:
P. PEECH & CO.,
Angwa Street.

Natal Agents:
THOS. BARLOW & SONS (S.A.) LTD.,
Smith Street, Durban.

TRADE AND INDUSTRIES SECTION.

Week in the Mining Material and Engineering Trades.

BUSINESS QUIET BUT HEALTHY—GOVERNMENT'S FUTURE POLICY REGARDING UNION'S INDUSTRIES FORESHADOWED—IRON AND STEEL—TIMBER AND BUILDING MATERIALS—INDUSTRIALIST'S VIEWS ON TRADE UNIONISM—BRITISH TRADE REVIVAL—NEW GOLD DISCOVERIES—FINANCIAL.

General.

The Premier's pronouncement of the Government's future policy regarding the Union's industrial development has been welcomed by the Rand community as foreshadowing a more vigorous programme in the tackling of the country's needs than we have heretofore witnessed. Especially was this welcomed in respect of the Union's iron and steel industry and the bounty to be given to all iron and steel produced from South African ores. The Government's hope of employment for all in the near future seems likely to be fulfilled, as the natives are being got back to work on the mines at a rate faster than was at one time hoped for even by the most optimistic. At the beginning of April only 125,331 boys were at work, during which month, however, there was a net gain over wastage of 13,741, making a total at work on April 30 of 139,072. On May 10 nearly 8,000 boys had been added to the labour force, which addition has in the meantime been daily increased. This increase of native labour—greater than was generally expected—means, of course, an ever-increasing employment of white labour, and at the present rate of native recruitment the absorption of white workers by the industry should not be of long protraction. Anyhow, the progress now being made is very encouraging, and gives heart of grace to the commercial community that within a period of a few months business in the mining material world, and indeed generally, will be more or less normal, with bigger prospects of expansion than the Rand has witnessed for a long period.

Iron and Steel.

The double holiday this week has, of course, dislocated business to a considerable extent. Although rather quiet, the indications are of firmness, and the majority of merchants report satisfaction with the month's turnover, which they say has been the best this year. Prices are practically unaltered, although, as we predicted some time ago, shortages in various lines are becoming apparent. Especially is this the case in 4 lb. drill hammers, wheelbarrows and certain sizes of bolts and nuts, in which prices have a tendency to harden and will probably advance in the near future. At the moment, however, merchants are too anxious to avail themselves of the chance of a sale below replacement values to increase their prices to any considerable extent. The consensus of opinion in mining material circles is that the tone is more healthy than it has been for months past.

Latest Quotations.—Dunswart iron, 22s. per 100 lb. basis price; Union Steel Corporation, Ltd., 25s. basis; imported iron and steel, flats, rounds and squares, from 28s. 6d. to 35s.; channels and joists, 30s. to 32s. 6d.; imported angles, 32s.; smaller sizes, 33s. 6d.; tee iron, 32s.; shafting, ½ in. down to 3-16 in., 7½d. to 9d. lb.; ⅝ to 1½ in., 6½d.; 1¾ in. to 6 in., 5½d.; steel plates, 1-16, ⅛, 3-16, 23s. 6d.; 10 x 5 and larger, 25s.; spring steel, 7½d. to 8½d. lb.; bolts and nuts, hexagon, round, ⅜, 8½d. to 9¼d. lb.; ½ in., ⅝ and ¾, 40s. to 45s. per 100 lb.; hexagon nuts, ⅜, 8½d.; ½ in., ⅝ and ¾, 7½d.; fish plates, bolts and nuts, ⅜ in., 8d. lb.; ½ in., 6d.; ⅝ in., 5½d.; ¾ in., 5d.; dog spikes, 35s. per 100 lb.; rivets, ¼ in., 11d.; ⅜ in., 9d.; ½ in. and ⅝ in., 37s. 6d. to 40s. per 100 lb., ⅝ in. 50s.; brass rods, ¼ in. 1s. 5d.; ⅜ in. 1s. 3d.; ½ in. 1s. 2d.; ⅝ in. upwards, 1s. 1d. per lb.; hexagon brass rods, 1d. lb. extra; copper rods, ⅜ in., 2s.; ½ in., 1s. 11d.; ⅝ and upwards, 1s. 9d. lb.; tool steel, 2s. 11d. to 3s. 3d.; brass sheets, 1s. 10d. to 2s. lb.; copper sheets, ¼ in. to 18 gauge, 1s 10d. lb.; 20 gauge, 1s. 11d.; 22 gauge to 28 gauge, 2s. lb.; firebox copper, 2s. lb.; copper tubes, ¼ in., 3s. 3d.; ⅜ to ⅝ in., 2s. 6d.; ¾ to 4½ in., from 2s. to 2s. 4d. lb.; phosphor tin, 2s. 11d.; ingot tin (Lamb & Flag), 2s. lb.; ingot lead, £28 per ton; drill steel, 6½d.; hollow, 9¾d.; 1¼ in., 9d. to 10½d.; wire nails, 30s. to 35s.; shovels, 30s. to 40s. doz.; wheelbarrows, 40s. to 45s.; picks, 37s. 6d. to 50s.; pick handles, 19s. 6d.; hammer handles, 14 in., 7s. 6d. to 8s.; 18 in., 9s. 6d.; 24 in., 13s. 6d.; 30 in., 17s. 6d.; 36 in., 25s.; barbed wire, "Shorthorn," 69 lb., 13½ gauge, 22s. per coil; plain galvanised fencing wires, No. 8 gauge, 100 lb. coils, 21s. 6d. per coil; No. 10 gauge, 100 lb. coils, 24s. 6d. per coil; No. 12 gauge, 100 lb. coils, 26s. 6d. per coil; bulb tee fencing standards, 14 lb., 19s. 6d. per dozen; 12 lb., 23s. 6d. per dozen; black baling wire, 14 gauge, 19s. per coil, 100 lb.; 12 gauge barbed wire, 22s. per coil, 96 lb.; plain wire, No. 8 galvanised, 21s. per coil, 100 lb.; fencing standards, 12 lb., 20s. per dozen; droppers, 4 ft., 1½ lb., 3d. per dozen; screening, 3s. to 9s. 6d. per sq. yd.; cyanide, 1s. 7½d.; zinc shavings, 1s. per lb.

Engineering Shops.

The recovery in trade which was generally anticipated is being delayed a bit, said a prominent engineer, but nobody is grumbling. Everybody has now practically reached bedrock in respect of expenses, and it is only a question of waiting until the mines get into full swing, which appears to be now only a matter of months.

Second-hand Machinery.

There is little to report this week in second-hand machinery. There are still inquiries about for gold recovery machinery, and there is quite a flutter in the West Rand. Some of the old companies that were practically abandoned years ago, such as the old Gipsy, Bohemian and Banket, have now all been taken up by syndicates, which will, of course, require machinery. This is only a unit of what will be done along the line of reefs, which all means business for the second-hand machinery dealer. There is now, said an influential dealer, little chance of obtaining the second-hand machinery which we had lately owing to the closing down of some mines, as many of these low-grade propositions, which were practically being propped up and anticipating liquidation, will now be able to resume work at a profit, as working costs are coming down daily. There are still inquiries for small loco-type boilers, and a good many trucks and rails have been requisitioned of late. The big mines still purchase second-hand material when obtainable, and stocks are being depleted considerably.

British Engineering Dispute.

The Federation of Engineering and Shipbuilding Trades has decided in favour of the resumption of negotiations for the settlement of the engineering dispute, and representatives of the unions concerned are meeting the employers to negotiate on the basis of the report of the Court of Inquiry. According to latest advices a satisfactory settlement of this dispute may be expected within measurable time.

Tenders are invited by the Roodepoort United Main Reef G.M. Co., Ltd., by the 30th June, for the right to purchase or tribute the following portions of the Roodepoort United

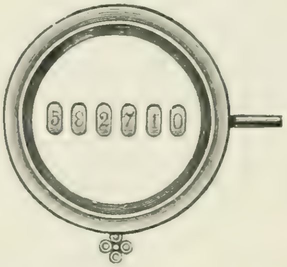
STAFFORD MAYER COMPANY (South Africa), LIMITED.
(INCORPORATED IN MAURITIUS.)
30, Commercial Road, DURBAN.
Codes: Bentley's A.B.C. 5th Edition. P.O. Box 1381. Telephone 3273.
Cable and Telegraphic Address: "STAFMAYER," Durban.

AGENTS FOR:
ENYATI COLLIERY, LTD.
BUFFALO COLLIERY, LTD.
BERNICA COLLIERY, LTD.
BOSCHHOEK ANTHRACITE COAL, LTD.
(INCORPORATED IN MAURITIUS).
Telephone No. 80. Telegrams and Cables: "ENYATI." P.O. Box 31, Vryheid, Natal.
Codes: Broomhall's Imperial Combination; A.B.C. 5th Edition.

ENYATI, BERNICA and BUFFALO COLLIERIES are Contractors to the Admiralty and South African Railways.
FIRST GRADE Coal supplied for Export, Bunkers and Industrial Purposes.

AGENTS FOR **ALBION SHIPPING CO.,** PORT LOUIS, MAURITIUS.

JOHN DAVIS & SON (DERBY), LTD.



REVOLUTION COUNTERS

LIKE ALL OF THE MANY OTHER WELL-KNOWN DAVIS-MADE PRODUCTS, THIS HARDING'S PATTERN COUNTER IS THOROUGHLY RELIABLE, WELL MADE THROUGHOUT, AND BUILT TO GIVE LONG SERVICE. THE CASES ARE ROUND, THE WHEELS ARE OF PORCELAIN, AND THE FIGURES ARE BURNT IN. TWO SIZES ARE STOCKED: 5 INCH DIAMETER WITH SIX FIGURES, ROTARY OR RECIPROCATING TYPE; AND 9 INCH WITH SEVEN FIGURES, WHICH CAN BE SET BACK TO ZERO.

SOLE AGENTS FOR SOUTH AFRICA:
BARTLE & COMPANY, LTD.,
Loveday House. P.O. Box 2466. 'Phone 3553. Wires: "FAGGOT."
JOHANNESBURG.
And Box 444, Kimberley. Box 1228, Durban.

EXPLOSIVES
FUSE
DETONATORS
ACIDS
CHEMICAL PRODUCTS
SHEEP DIP
CATTLE DIP
ETC., ETC.

CAPE EXPLOSIVES WORKS, Ltd.
P.O. DYNAMITE FACTORY,
SOMERSET WEST, C.P.

Mine: (a) Kimberley east section, (b) United section, and (c) No. 3 section. All these sections are equipped with hoisting plants, headgears, tracks, trucks, etc.

Timber and Building Materials.

The timber business is at present quite good locally. Stocks are fairly large and prices firm in consonance with quotations from the Baltic. The tendency in respect of 3 x 9 deals is a hardening one.

Timber prices.—3 x 9 deals, 1s. 1d.; scantlings, 10½d.; beaver boards, 4¼d. to 4½d.; floorings, 6¼d. to 6½d.; ceilings, 4¼d. to 4½d.; Oregon, 5s. 6d. a cube; pitch pine, 7s. 6d. to 8s.; corrugated iron, 8d. to 10d. with a firmer tendency. Furniture timber: Burmah teak, 17s. 6d. per cube here for first quality, 14s. 6d. for second at the coast; American oak, 1 in., 10½d.; 1½ in., 11d.; 2 in., 11½d., at coast; and Japanese oak, 1 in., 1s. 1d.; 1½ in., 2 in., 1s. 2d., at coast; West African mahogany, 1 in. to 4 in. thick, 26s. 9d. to 27s. 6d. per cube at coast; Rhodesian mahogany, 9s. per cubic foot at mills; Honduras mahogany, 30s. per cubic foot; American yellow pine, 1s. 6d. per foot of 1 x 12 here; American pine shelving, 10d. per ft.; 3-ply wood, 3 m.m. up to 5 m.m., alder and birch, 4d. to 6½d. per sq. ft.; oak and teak, 3-ply, 11d. per sq. ft. Prices for bricks remain unchanged at: Klompje bricks, 25s. per 100 at works; fire bricks, £10 per 1,000 at works; mixed, 70s.; wire-cuts, £4 10s. to £5; and £5 for pressed per 1,000, at kilns; columns from 20s. to 30s., according to size; roofing tiles, Marseilles, £25 per 1,000 at the works; chimney pots, 12 in., 7s. 6d.; 15 in., 9s.; 18 in., 10s. 6d.; dry red oxide, 16s. per 100 lbs.; white lime, 7s.; unslaked, 10s. 6d. per 180 lb. bag; 8 lb. bag, 1s.; blue lime, 4s. 3d.; blue plaster lime, 5s. 3d.; cement, 11s. 6d. a bag; damp course and roofing, 36s., 54s. to 55s. for 1 to 3-ply.

Building operations, although fairly good, are still below expectations, but are expected to go ahead within six weeks or two months.

Second-hand Timber and Iron.

The report in this section this week is that business is no brisker, and that few inquiries are being made, but better things are expected next month. Timber is about 8d., and iron 6d. Stocks are not too abundant.

Further Views of an Industrialist on Trade Unionism.

An important member of the engineering profession, in the course of a conversation this week, said:—If trade unionism does not die an honest, natural death in this country, as it should do if it had any conscience, then one might hope that it will recognise its obligations by allowing more facilities to industries in the tackling of the manufacture in earnest of hundreds of articles at present imported. It is like preaching to the devil to endeavour to persuade trade unionism to go out of its way to do anything for its own and for the common welfare, but still surely even the most hide-bound anti-capitalist, fanatical trade unionist must admit that there is something ridiculous in the position which allows thousands of pounds per month for engineering articles to enter and be consumed in the Union—articles which are in most cases manufactured, or at least partly manufactured, by women and other forms of cheap labour in England and European countries, and by some form of coolie labour in others. Yet we are supposed to stick to the idiotic, suicidal rules and regulations of an insane minority community of trade unionism. At present the only chance of competing is to employ so-called scab labour at whatever rate of wages the selling price of a particular article will stand. Surely some day, if there is really a sane element in trade unionism, that element will become vocal, knowing as it must do that the only effect of its trade union organisations is to confine a good workman to very narrow limits as far as his own chance of bettering his own conditions is concerned, and to carry on his back a ridiculous multitude whose services are of little economic value, whilst at the same time every street corner is occupied by some windbag, most likely earning a comfortable living, spouting such poison as he can as long as he does not get arrested. The engineer interviewed said he raised his hat to many men who are trade unionists and good men in every respect, and he had heard them say that they willingly sacrificed their own interests to secure the betterment of conditions for the great mass of workers—a grand principle, he said, on paper, but what of it in practice? Either their standard of remuneration has to fall to almost starvation point to enable industry to absorb the good, bad and indifferent, or else industry is forced to employ all at a living wage, which, of course, no industry can do, and only results in such pitiful conditions as we now have with us. The cry of the sick, lame and the halt, which must be made to include the scoundrel, the loafer and the incompetent, should and must become the cry and problem of the State, and the absurdity of endeavouring to saddle industry with the payment of a living rate of wages to all and sundry be recognised.

Electrical Goods.

Business, said a prominent dealer, has been pretty fair this week. One cannot grumble at present trading, and indications are apparent that very shortly we shall see much improved conditions. In the meantime inquiries have slackened off from country districts and from places outside the Union. Town business, though fair, leaves something to hope for. Stocks of electrical wares are coming in all right, and there are now no shortages in any lines. No indications of operations have as yet been received from oversea.

British Coal Industry and Wages.

According to a statement made in the House of Commons last week by Mr. Brideman, Secretary for Mines, all the markets lost last year through the strike had been recovered, and the exports were now equivalent to those of the great year 1913. On the other hand, the miners' representative, Mr. Adamson, warned the Government that a dangerous feeling was growing in the mining districts, where the average wage was 42s. per week, which was 60 per cent. worse than before the War. Over 550,000 tons of coal were exported last week, which is a record for one week since the War. Of this, Germany took over 100,000 tons.

British Trade Revival Prophesied.

Lord Beaverbrook, speaking in London, said he was very confident of an immediate commercial revival, and prophesied a crash in Germany following the madness of financial inflation. He urged that attention should be paid to the markets of the United Kingdom, Ireland, the Dominions and America, where British trade could prosper without considering Central Europe.

New South Wales Gold.

Rich finds of gold are reported from the district of Muriel Tank, nearly 400 miles north-west of Sydney. The chief inspector of the State Mines Department states there are excellent indications of a rich field. Water is, however, scarce, which is a serious matter in view of a certain rush. A large formation was found in an abandoned shaft, panning 8 dwt. to the ton, and a reef 2 ft. wide, carrying rich visible gold. Further discoveries have also been made in this region.

SWISS CARBIDE

For every Purpose. Excellent Quality.

B.A. and W.A. Standards.

Delivery in lots of 10 tons and more direct from
Works to c.i.f. South African Ports.
Packing in 50 Kg. 100 Kg. Strong Iron Drums

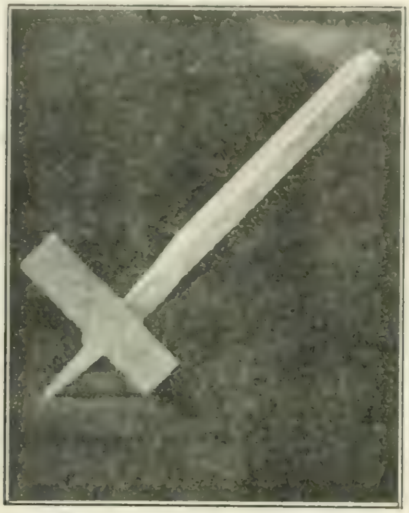
Ask for Quotations

Electro Chemical Works Gurtnellen
GURTNELLEN (SWITZERLAND).

Cable Address: "Carbid, Gurtnellen."

A.B.C Code 5th Edition Old-established Swiss Makers

SHOCK TOOLS



SHOCK Tools have always been the toolmaker's greatest problem—how to avoid the "weak spot"—how to combine extreme toughness and hardness—how to avoid crystallisation in working.

"PAX" NONBREAK BRAND

[illegible] perfection in the solving of these problems.

[illegible] it has now been tested with results of uniform excellence for: Rivet Sets, Punches, Snaps and Pneumatic Tools generally, Mining Drills, Machine Chisels and Cold Sets, and has [illegible] the heaviest degree.

[illegible] ment.

[illegible] of high-speed steel ingots—a test chisel (as illustrated) has been subsequently driven clean through a block of mild-steel and then, without dressing, taken back on to chipping cast iron and cast steel ingots.

When correctly hardened—the working edge is hard to the file test, but will not chip or break.

The first cost is naturally higher than standard qualities, but its durability and freedom from breakage make it a cheap steel in practice.

There are doubtless some tool jobs that give you trouble [illegible] "Pax" Nonbreak Brand [illegible]

"Pax" Nonbreak Steel is manufactured by

SANDERSON BROS. & NEWBOULD, LTD.,
SHEFFIELD

Sole Agents for South Africa.

BARTLE & CO., LTD.,

LOVEDAY HOUSE. P O. Box 2466. Phone 3552. Wires "Faggot."

JOHANNESBURG.

And at KIMBERLEY and DURBAN.

Telegrams :
"NIVONIA," Johannesburg.

'Phones :
2196,—2197,—2198

J. & R. NIVEN, Ltd.,

ENGINEERS, CONTRACTORS, MERCHANTS.

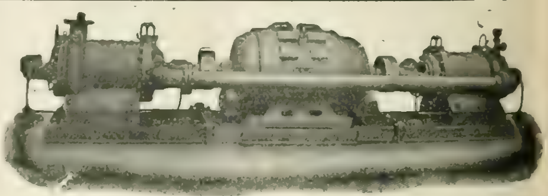
BALATA BELTING
JAMES DAWSON & SON, Ltd.
BITUMEN SHEETING
GEO. M. CALLENDER & CO., Ltd.
BOILERS
PENMAN & CO., Ltd.
COAL CUTTERS AND CONVEYORS
JEFFREY MANUFACTURING CO.
COLLIERY PLANT
CAMPBELL, BINNIE, REID & CO.
DRILL STEEL
JOHN NICHOLSON & SONS, Ltd.
ENGINES, LOCOMOTIVES
ANDREW BARCLAY, SONS & CO., Ltd.
ELECTRIC LIFTS
A. & P. STEVEN, GLASGOW.
CRANES
BUTTERS BROS., GLASGOW.
HOSE, VALVES, SHEET RUBBER
THE LEYLAND & BIRMINGHAM RUBBER CO., Ltd.
LUBRICANTS
THOS. HINSHELWOOD & CO., Ltd
STEEL SCREENING
THOS. LOCKER & CO., Ltd.

Barsdorf's Buildings, Marshall Street,
JOHANNESBURG.

SULZER

HIGH-LIFT CENTRIFUGAL PUMPS.

For Mine Drainage, Waterworks, Etc.



Pumping Set suitable for lift of 2,500 ft.

LARGE LOCAL STOCKS IN MEDIUM AND LOW-LIFT PUMPS.

For particulars apply to:

RICE, WILSON & HERD,

86, 87, 88, 96, Standard Bank Chambers, Commissioner St.
P.O. Box 930 Telephones 2299 & 2300. JOHANNESBURG.

Also South African Agents for
CALLENDER'S CABLE & CONSTRUCTION CO., LTD.
BRITISH THOMSON-HOUSTON CO., LTD., etc., etc.

The Week's Meetings.

MODDERFONTEIN B.

INCREASE OF £94,306 IN PROFIT.

Improvement of Pennyweight in Ore Reserves.

Sir E. A. Wallers, K.B.E., chairman of the company, presiding at the annual meeting held on May 18, [illegible] adoption of the report, he said: In studying the report and accounts for the year under review, the outstanding features are the increase in the tonnage milled of 59,800 tons and the increase in working profit of £94,306, as compared with the previous twelve months. In both respects records have been constituted in the history of the company, and we must feel highly satisfied with the results achieved.

The increase in the working profit is all the more gratifying when we remember that while there was only a slight reduction in working costs, from 26s. 1d. to 26s. per ton milled, there was an increase in the development footage of 4,184 feet, which it is estimated added to the working costs by 9d. per ton milled, and at the same time the revenue derived from the price obtained for gold above its standard value decreased by no less than £40,742.

But the working profit, taking gold at standard value, increased from £492,984 to £628,032, being an increase of £135,048. The reason for this greater working profit is explained partly by the increase above-mentioned in tonnage milled, and partly by an increase in the yield of .579dwt. per ton, from 9.948 dwt. in 1920, to 10.527dwt. in 1921, due chiefly to more favourable results from stoping operations than had been anticipated.

Financial Position.

The net balance of working expenditure and revenue account for 1921 amounts to £1,003,969 2s. 9d. To this must be added the balance unappropriated from the previous year, viz.: £294,902 11s., together with a small amount of £981 15s. 1d. in respect of forfeited dividends, making a total credit in the appropriation account of £1,299,853 8s. 10d.

This has been allocated as follows:

	£	s.	d.
Capital expenditure ...	£138,956	7	9
Government and Provincial taxes	187,411	12	3
Dividends Nos. 18 and 19	665,000	0	0
	£991,368	0	0

leaving a balance of £308,485 8s. 10d. to be carried forward to 1922. Of this balance, £125,338 12s. 4d. is represented by net cash and investments after allowing for liabilities, and the remainder is made up of stores and materials, sundry debtors, etc., as shown in the directors' report.

During the year the amount spent on capital account was in round figures £160,000, the details of which are shown in the manager's report. You will see that the greater part of the money was expended in sinking and equipping the south-eastern and south-western shafts, but there was also some fairly heavy expenditure incurred in extension to water services and in additional housing for employes.

Ore Reserves and Development.

As regards the ore reserve position, you will see from the Consulting Engineer's report that as calculated at December 31, 1921, the tonnage was estimated to be 2,773,300, and the value 9.6 dwt. over [illegible], as against a tonnage of 3,006,600, valued at 8.6 dwt. for the previous year.

Turning now to development operations, the total development footage accomplished during the year amounted to 24,726 feet. The two new deep-level shafts reached their final depth during the year under review. At the south eastern shaft development operations were commenced in July and the total amount of footage accomplished was 2,880 feet, of which 1,745 feet disclosed reef. The reef exposures on the 6th and 7th level drives were unpayable; but better grade ore is indicated at the present time on the 6th level west. At the Geduld raise, of which mention was made last year, a drive has been extended 320 feet in a southerly direction, the values being satisfactory and averaging 893 inch-dwts. for the full distance. The south-west shaft reached its final depth of 1,769 feet in June, and by the end of the year its final equipment both on the surface and underground was almost completed. This work has since been entirely finished. Good progress has been made with the crosscuts at the fifth, sixth, seventh and eighth levels, and in all respects, as a result of the new workings, the development of this section of the mine will be much facilitated.

The south-west section continues to be the area where the bulk of the payable ore is contained. Although for a time the values were more erratic than during the previous year, you will be pleased to observe that during the last quarter of the year there was a steady improvement at several points.

The development accomplished in the north-eastern section of the mine amounted to 5,926 feet, of which 2,950 feet disclosed reef. Of this, 44.7 per cent. was payable, averaging 412 inch-dwts., and the general conditions in this section, although much of the development work accomplished must be regarded as of a preliminary nature, are not very encouraging.

As was explained to you last year, it was necessary to take steps to safeguard ourselves from a shortage of water. By means of the pipe-line laid to the Modder East property existing supplies were supplemented, and any immediate danger of a shortage was averted. It was decided, however, to participate with other mines in the neighbourhood in an extension to the Rand Mines water system, and the new construction work in this connection is now far advanced.

Modder East's Results.

Before dealing with mining operations and other events in the first few months of the current year, I must say a few words about our eastern neighbour, Modderfontein East, Ltd., in which company we hold both shares and debentures. At June 30 last, the ore reserve was estimated at 1,611,700 tons of 7.7 dwts. over a stoping width of 57 inches, and during the year a working profit of £209,789 16s. 3d. was realised, although costs were at the high level of 30s. 5d. per ton milled. Since that date much development work has been carried out, but on the whole so far the values have been somewhat disappointing.

Payable development results for six months ended December 31:—

	Footage on Reef					
	Total	Payable	Per cent.	Inches	Dwts.	Inch-dwts.
No. 1 shaft	4,895	1,495	30.5	30	12.9	386
No. 2 shaft	3,020	2,290	75.8	28	11.6	324
No. 3 shaft	1,425	1,015	71.2	23	15.7	361
Ttl. and aver.	9,340	4,800	51.4	27	13.0	351

As regards current operations on our own property, I do not think it is necessary for me to deal at length with the recent strike, which affected the whole industry, and which subsequently culminated in a general strike and attempted revolution. All work ceased on the mine, with the exception of the maintenance of essential services, from the morning of January 10, and was not resumed until March 17. During this period I am glad to be able to report that no lives were lost among the officials who remained so steadfastly at their posts, and no damage of any serious nature was done to mine property. I feel sure that it is your wish that we should record to the manager and to all the officials our sincere thanks for their loyal services during an exceptionally trying period.

This Year's Figures.

Owing to the prolonged stoppage any figures relating to tonnage milled or development accomplished during the current year are apt to be somewhat misleading. For the quarter ended March 31 47,000 tons were crushed, and a total loss of £6,854 was incurred, but you will understand that in reality the losses borne by this company as a result of the strike are exceedingly heavy, amounting to a deferment of approximately three months' profits to the end of the life of the mine. For the month of April, however, it is possible to record a considerable improvement. Although, in common with all other mines on the Rand, our native labour supply still remained depleted, 40,000 tons were milled at a yield of 10.3 dwts., with a reduction of working costs to 25s. 2d. per ton milled, as against 26s. for the year 1921. From now onwards it is hoped that steady progress will be made towards efficiency, and that an appreciable reduction in working costs will be achieved during the remaining portion of this year.

In conclusion, I would like to express the Board's appreciation of the valuable services rendered by our consulting engineer, Mr. H. Stuart Martin, by the mangaer, Mr. C. L. Butlin, and by their respective staffs.

I now beg to move that the directors' report, balance sheet and accounts for the year ended December 31, 1921, laid before the meeting, be received and adopted.

The Chairman then declared the subject open for discussion.

In reply to a question by Mr. G. S. Kope, the Chairman stated that ore reserves usually comprised tonnage available for immediate stoping as well as tonnage which could not be worked for some time to come. The ground developed by the Geduld raise in the south-east corner of the mine fell into the latter category, but its inclusion in the ore reserve was, he considered, fully justified. The best means of transporting [illegible]

[illegible]

[illegible] ried unanimously.

THE E.R.P.M.

DECLINE IN ORE RESERVES.

Importance of Working Cost Factor.

Sir Harry Ross Skinner, presiding at the annual meeting of the East Rand Proprietary Mines, Limited, [illegible] said:

The financial position of the company at December 31, 1921, showed a balance of [illegible] but has since been adversely affected by the strike. Against these available resources are liabilities under the heading of [illegible] and the £[illegible] due on Government [illegible] account. The Government have agreed, subject to certain conditions, to the remission of their share in this account. The liability in respect of miners' phthisis compensation was computed at the last meeting at £[illegible], but [illegible] as this amount may appear it will be considerably increased if the further extension of benefits embodied in a draft Bill are passed by Parliament. The company's current contribution to the phthisis fund amounts to £41,110, equivalent to no less than 3s. 7.8d. per white shift.

The yield during the year was only 4,211 fine ounces below the previous year, but realised £124.818 less, due to the difference in the average price obtained for gold. The average cost per fine ounce was 101s. 3d., leaving a margin of 4s. per fine ounce, as against [illegible] the previous year.

Development Position.

The total quantity of water pumped amounted to 748,607,000 gallons, at a cost of £101,375, or 1s. 4d. per ton milled. The pay tonnage developed was 278,910, of an average value of 7.5dwt. per ton. Practically the entire eastern section can only be regarded as a reclamation area. The western section, covering a distance of 7,000ft. along the strike, has disclosed satisfactory values from the 28th to the 33rd levels, and development will be concentrated on this area, where the future of the mine lies. The ore reserve at December 31 shows a decrease of 464,200 tons and a rise in value of .6dwt. The decrease in the reserve is due to the failure to develop sufficient pay ore and also to the exclusion of certain blocks formerly in the pay reserve, the value of which was below the revised pay limit. It must also be borne in mind that the pay ore reserves are so depleted and scattered that they are unable in themselves to supply ore in sufficient quantity to keep the large reduction plant employed even on a basis of 60 per cent. of its full capacity. To make up the deficiency the company has to draw heavily on reclamation ore, which, while paying expenses, is of lesser value.

Towards the end of the year the position of the company owing to the fall in the price obtainable for gold had become increasingly precarious. When the strike was declared on January 9, with very few exceptions all men other than officials and those engaged on essential services "downed tools." This action was a few days later followed by the withdrawal by the South African Industrial Federation of all men on essential services, although every employe knew that such withdrawal entailed the immediate flooding of the mine, and the con[illegible] [illegible] the loyalty of the officials who saved a valuable [illegible] Government, and made it possible to offer re-employment to the men who had gone on strike. The total working loss during the strike amounted to £147,000. [illegible]

Outlook for Reduced Costs.

It is hoped by the reorganisation of [illegible] which is now [illegible] that working costs will be gradually reduced to a figure which with [illegible] may enable the mine to continue operations even with gold at the normal price. The cost of producing a fine ounce in April was [illegible] 3d., and we have still a long way to go before we reach the point of safety, irrespective of any profit, which might be set at 78s., varying, of course, with the aggregate gold output per month. Only by economy and efficiency can this mine hope to continue, and unless much is accomplished in this direction the end is close at hand.

The montaly tonnage the mine can probably supply will be between 100,000 and 120,000 tons. The revenue from this tonnage will, we calculate, average 5.3dwt., or say, 22s. 3d. per ton, which with gold at normal price would give a monthly revenue of about £130,000. To meet standing charges of £11,000 per month, and to allow for contingencies, working costs must not exceed 20s. per ton, including all necessary shaft sinking and development. Working costs from 1914 to 1917 averaged 19s. 4d. per ton, but as these costs have to-day to carry an additional 2s. to 3s. per ton for increased phthisis contributions, holiday pay, shorter hours worked, and extra cost owing to increased depth, it is evident that we must get below prewar costs. We hope that gold will remain above its standard value long enough to enable us to put our house in order

◆

ROSE DEEP.

A TYPICAL LOW GRADE MINE.

How Government and Labour Must Help.

The annual general meeting of the Rose Deep was held on May 23, Mr. F. Raleigh, the chairman, presiding. The Chairman said:—

During last year a profit of £127,794 was earned. From this sum, Government and Provincial Taxes, totalling £19.674, and two dividends of 7½ per cent. each, were paid. The credit balance carried forward on appropriation account at the end of the year amounts to £139.526, being an increase of £5,480 for the year.

Compared with the previous year, there is a falling off in the working profit earned of £96.111, which is accounted for by a slight decline in the yield per ton, a lower price received for gold, equal to 4s. 8d. per fine ounce, and an increase in the working costs. Excepting the latter, these factors are outside the control of the management, and the chief cause of the increased costs is the expenditure of £24,000 on the alterations to the western mill.

You will remember, shareholders were advised in the quarterly report for the three months ending June 30 last that it had been decided to close the 100-stamp eastern mill and concentrate reduction operations at the 200-stamp western mill, which it was intended to bring up to a capacity of 53,000 tons per month.

The work is well in hand and is expected to be completed by the end of June. Economies will be effected as a result of the change, which will have a [illegible] effect on the working costs. I am hopeful that the provision of a further £3,000 during the current year will [illegible] the total expenditure on the mill.

A Typical Low Grade Mine.

You are aware that your property is a typical low-grade proposition, and to enable it to work the large body of gold-bearing rock still contained in the mine, it is imperative that the tonnage output must be maintained and working costs reduced. Last year's price of gold above standard represented to this company 5s. 3d. per ton. Without this additional amount the value of the yield would have been reduced to 20s. 7d. per ton, and as working costs were 22s. per ton, a loss of 1s. 5d. per ton, equal to £43,931 would have resulted from the year's operations. Since the close of the year the price of gold has continued to fall, and at to-day's price, the working costs of last year would not permit of any profit being earned by the company.

The Great Strike.

Recognising the view I have put forward, the gold mining industry made special efforts to bring about certain reforms, and early in December last approached the South African Industrial Federation with definite proposals to alleviate the position occasioned by the falling price of gold.

These were unfortunately not acceptable to the leaders of the various men's unions, who called a general strike of mine workers early in January last. You are all acquainted with the deplorable events which ultimately led to the intervention of the Government of the Union to restore law and order and suppress the rioting and anarchy which prevailed during the first half of March.

During the strike the mine lost two months' tonnage, and incurred losses for the first quarter of this year totalling £34.261. Work was resumed in the latter half of March, but owing to the serious shortage of native labour, the tonnage output is, I regret to say, now much reduced. There are, however, indications that the native labour position will recover before long, and the Board has a reasonable hope that following the reforms which have been introduced in the gold mining industry as a result of the strike, the company may be able to meet a further decline in the price of gold.

How Government and Labour Must Help.

Your Board has done everything possible to secure low working costs, and I would instance particularly the re-organisation at a heavy cost, of reduction operations at the western mill, and the provision of additional pumping facilities. It now remains with the Government and the workers to realise their responsibilities by enabling the company to work the greatest tonnage possible, the one by sympathetic consideration for the necessities of this low-grade property, and the relaxation of unnecessary burdens; and the other by a real effort to obtain the greatest efficiency from the labour and stores they use.

The footage of development accomplished during the past year, the payable ore developed thereby and its value were in keeping with the figures of 1920. The ore reserves on revaluation show a falling off of 495,610 tons, with a slight increase in their value, i.e., .1 of a dwt. This falling off is due to our inability at this stage in the life of the mine to develop a sufficiently large ton nage, also to the exclusion of a certain tonnage due to the raising of the pay limit. In addition certain blocks were taken out of the ore reserves, having proved to be unpayable.

Ex-Enemy Shares.

The Central Mining and Investment Corporation, Limited, has acquired from the Union Custodian of Enemy Property all the enemy shares held in the companies of the group, and has offered the enemy shares of this company to the Board at cost price plus 5 per cent. commission to the Corporation. The number of shares is approximately 36,000, the price paid to the Custodian being 9s. 9d. per share. Your directors regard this price as very advantageous and I am pleased to say that arrangements have been made with the Corporation under which this company will take over these shares. It is the intention of the Board to recommend shareholders to reduce the capital of the company by cancelling the shares so acquired and to convene in due course a special meeting of shareholders to authorise the necessary steps being taken towards this end.

Our thanks are due to the Consulting Engineer, the Manager and the staff for their excellent work during the year under review. I want also to voice the Board's cordial appreciation and I know shareholders will whole-heartedly approve, of the loyal and excellent services rendered by the manager and his officials during the strike period. They set themselves to keep the mine intact, and incidentally to work it so far as was humanly possible, and they succeeded. I will not attempt to describe their difficulties, since the evidence now being given daily in the courts shows what they went through.

I now beg to move that the report, balance sheet and accounts for the year ending December 31, 1921, laid before the meeting be adopted.

* * *

GELDENHUIS DEEP.

REDUCED WORKING COSTS ESSENTIAL.

Mine Saved by Gold "Premium."

Mr. A. F. Mullins presided at the annual meeting of the Geldenhuis Deep on May 23, and in the course of his speech said :—

Notwithstanding an increased tonnage milled during last year, the working profit earned shows a falling off of £82,375. This reduction is due to a decrease in the yield of a ¼dwt. per ton, a lower price for gold equal to 53d. per fine ounce, and an increase in the working costs of 2d. per ton. The working profit was negligible, being only £2,516, equal to 1d. per ton.

Had it not been for the additional revenue received owing to the price of gold being above standard, a loss would have been incurred of £159,150. The results obtained from the milling of over half a million tons of ore, from which 153,450 fine ounces of gold were obtained at a cost of over £800,000, are deplorable, and are an ample justification for the necessity of introducing reforms and reorganisation if low-grade mines such as ours are to have any chance of continuing mining operations.

During last year the average price obtained for gold by this company was 105s. 1d. per fine ounce, and during the last three months of the year under review it was below 99s. per ounce, and monthly losses were made. With gold at that figure it was evident the company could not continue operations, especially as the price was still on the down grade.

The Strike and the Gold Premium.

As you are aware, the reply of the Industrial Federation to the Chamber of Mines' suggested altered conditions of employment was to call a general strike of mine workers, which lasted over two months. The conditions under which the mine resumed work towards the end of March were such that the board is hopeful of being able to reduce working costs to meet the continuing fall in the price of gold. To-day the price is under 93s. per ounce, or 12s. per ounce less than the average price for last year, and it is generally thought that the price will gradually continue to fall until it reaches standard (85s. per ounce). Since 1916 working costs have increased by 7s. 6d per ton, and the value of the yield has decreased by .5 of a dwt. per ton, representing a total decline of, say, 11s. per ton in the revenue. I need not emphasise the great necessity for a reduction in working costs any further; it is patent to all of us that unless a great reduction is effected, the mine cannot continue working.

The working profit, sundry revenue and net credits on capital account enabled the appropriation account to show an increased balance of £11,586 for the year, bringing it up to a credit of £161,657 at the end of last year. Of this sum £88,054 is in the form of cash and investments, the balance, £73,603, being represented by stores, shares in co-operative concerns, sundry debtors, etc.

Development Position.

In regard to the mine, you will notice from the report before you that there was a certain amount of shaft trouble during the year, but for which the tonnage milled would have been somewhat higher.

We still have some promising looking ground to open up on the south reef in the south-western section. This will be attacked as rapidly as possible in order to improve the grade of ore mined. The equipment of No. 2 shaft down to the 21st level will be completed about July next, and it will then be possible to mine ore from the Jupiter ground acquired during the year under review.

The development footage accomplished again showed an increase, but only resulted in a small tonnage of payable ore being developed of average value. This has had an adverse effect upon the payable ore reserves on hand, as compared with the previous year's figures. The falling off is further accentuated owing to the elimination of ore which is not of sufficient value to justify the opening of caved areas to enable it to be mined, and the cutting out of a considerable tonnage owing to the necessity of fixing a higher pay limit.

At the last annual meeting the chairman referred to the large tonnage of developed ore standing in the mine which was unpayable, but which was valued at 4dwts. or over. Large blocks of this now lie in or beyond areas that have been affected by recent movement, and these blocks will probably never be worked. The consulting engineer estimates that we still have in fully developed and immediately available blocks some 780,000 tons only just below the present pay limit, and that a reasonable reduction in working costs will bring these within the margin of payability

Strike Losses of £56,295.

The first three months of this year, owing to the conditions that prevailed naturally resulted in a heavy loss, amounting in all to £56,295. During that time we were only able to produce 9,962 ounces of gold. By the time the strike was over our native labour forces had dwindled considerably, and operations were much hampered. The numbers have gradually increased, and we hope before long to get back to our full requirements.

During April we milled 38,223 tons, at an average cost of 24s. 4d. per ton, and the loss was £639. This month we hope to make a profit.

You will have noticed in the Press that the Central Mining Corporation has purchased from the Custodian of Enemy Property all the shares he holds in this company by virtue of his position. The Corporation has offered them to this company at cost price, plus a commission of 5 per cent., and we have taken them over. The number is approximately 20,000, and they cost 3s. Our intention is to cancel them in due course.

A Bright Spot.

There was one bright spot in the troublous times through which we have lately passed. In spite of threats and visitations our officials at the mine stood firm at their work, and carried on under the utmost difficulties. They not only kept the mine ready for the restart, but with a very limited assistance from returning employes they steadily supplied the mill with small quantities of ore from the day the Prime Minister appealed for a return to work, not even desisting during the dark days of the revolution. For this great praise is due to the manager and his staff.

We have also to acknowledge the work done by our consulting engineer.

I now beg to move the adoption of the report and accounts for the year ended December 31, 1921.

The reports and accounts were unanimously adopted.

* * *

THE VILLAGE DEEP.

FUTURE OF THE COMPANY.

Enemy Shareholdings.

Brighter Prospects.

Mr. E. G. Izod, the chairman, presided at the annual meeting of the Village Deep, on May 23, and in the course of his speech, said :—

Tht claim area of your property has been slightly increased due to the acquisition from the Government of the undermining rights of just over nine and three-quarter claims in the La Rochelle area. It was necessary to obtain the right to work ground in this area as the existing ground to the east of the lower portion of the Turf incline shaft was almost fully developed.

The Year's Operations.

Operations for the year 1921 resulted in a total working profit of £112,745 being earned. After making certain small adjustments in revenue and expenditure account, the net profit carried to credit of appropriation account was £115,271. This profit enabled us to distribute two dividends, totalling ten per cent., which absorbed £106,067.

The estimate of ore reserves at the close of the past year disclosed the fact that the tonage in reserve had fallen by over 300,000 tons, but the values had increased by 0.2dwt. This decrease in tonnage is due partially to reduced stoping width being used for purposes of calculating the reserves, these reduced widths now being possible with the general introduction of jack hammers. There is also in the mine, developed, but not valued, approximately 560,700 tons, which is an increase of 117,900 tons of unvalued ore as compared with the pre-

[illegible] As [illegible]

[illegible] ton milled fell by 13d., even though the [illegible] The [illegible] the value of the yield was due to the lower price received for our gold, the figure for 1921 being 105.2s. per fine [illegible]

Reduce Capital Expenditure.

Capital expenditure on plant and equipment was considerably less than the amount forecasted in my last address to you. The figure I then gave of £11,000 shows a considerable saving, principally due to the cancellation of the [illegible] £11,000 which it was thought would be the amount to be spent as our proportion of a central pumping scheme [illegible] I am glad to say that modifications in the central scheme have now been made, which, as far as one can see at present, will free the Village Deep from any financial commitments in this direction.

Development.

The development since my last address to you has been satisfactory. In the south-western section the ground is opening up fairly well, and while no high grade blocks have been disclosed, the figures show a high percentage of payability, which is distinctly encouraging.

In this section of the mine, the 30th level has been driven west for about 500 feet from the shaft and disclosed a fairly large block of ore valued at 6.6 dwts. over a stoping width of 54 inches. The Main Reef leader exposed by the 31st level cross-cut shows a value of 9.2 dwts. over 42 inches.

On the south-eastern side of your property, development drives are now entering the ground in the La Rochelle area recently acquired from the Government. It will be remembered that I referred last year to the faults and dykes in this section of the mine, but I am pleased to say that recent work discloses the fact that the ground is much less broken as we go south, which is an encouraging feature in an area which is important to the future success of our mine.

With regard to the main incline shaft, there is approximately three months' work yet to be done to sink it to its full depth, which will then be almost exactly 6,240 feet vertically below the collar of the shaft.

Excavations for the second stage winding plant at the 31st level are progressing, and the work will now be pushed ahead with all possible speed.

The mine is now fully equipped with jack hammers, and the reduction in the stoping width thereby brought about is of undoubted benefit to the grade of the ore mined.

The Recent Upheaval.

It is not for me to comment on the events which led up to the strike and attempted revolution, as the whole matter is under investigation by a Government [illegible] I can, however, say that [illegible] has been brought about, and it is hoped that the industry will have some measure of prosperity in the future.

As far as our company is concerned during the strike we suffered as other mining companies did, by a serious attempt to stop essential services. When the strike started, and esential services, such as pumping, etc., were withdrawn, our mine commenced to fill with water. It was, however, prevented from filling above the 28th level owing to the strenuous efforts made by our mine staff, and their efforts and assistance under almost in[illegible] difficulties ultimately succeeded in keeping the mine clear of water. It was only during the dark days of March 10, 11 and 12, that the pumps were again stopped, but, after the strike was declared off, and operations were resumed, it only needed a few days to again pump the lower levels dry.

The report for the quarter ending March 31, 1922, reflects the effect of the strike on your company. A total loss of over £55,000 for this period has encroached seriously on our cash resources, but we hope to re-establish the position in the course of a few months.

Future of the Mine.

Shareholders will naturally look for an expression of opinion as to the future of our company, but it is almost impossible to give any forecast which stands a reasonable chance of being substantiated. I can, however, safely say that the outlook is a fairly bright one, and whereas, in December last, it looked as though we should have seriously to consider closing the mine, there are now good prospects of making profits, even should gold return to its standard price.

The grade of ore keeps well up to normal, and indications are that it should be maintained as development proceeds.

Strike Results.

During the strike period no development was done, and the mine lost approximately 800 natives, who returned to their homes. Since work was resumed there has not been a sufficient amount of native labour available to permit of any progress with our development, which is, however, gradually being resumed as our native labour force increases.

I am glad to say that natives are returning to the mine in fair numbers, although at the moment we still require about 500 to enable us to carry out our full development programme, and mine and mill our maximum tonnage.

The capital expenditure for the current year is expected to be between £16.000 and £17,000, and will provide a pumping plant at the 32nd level, and certain other work in connection with the preparations for the 2nd stage hoisting. It must be remembered that further capital moneys will have to be provided later on for the electric hoist for the 2nd stage incline, and for further additions to our pumping plant at the lower levels, but until estimates have been framed on the probable expenditure under these headings, I am not able to indicate what amount will be necessary.

Enemy Shareholdings.

As shareholders will naturally be interested to know the latest information about enemy holdings, I am glad to announce that The Central Mining and Investment Corporation has just concluded negotiations with the Custodian of Enemy Property for the purchase of a large block of enemy shares under his jurisdiction. Included in this purchase are approximately 55,000 shares of our company, and, as these were offered to us by The Central Mining and Investment Corporation, your Board purchased them for the company at the price paid by The Central Mining and Investment Corporation, viz., 5s. per share, plus 5 per cent. commission and expenses incurred in the transaction. It is the intention of your board to cancel these shares, and the necessary arrangements for the reduction of the capital of your company consequent on the cancellation of the shares will be made at a later date.

A Bright Future.

I have tried in the above few remarks to give shareholders a general view of the present position of the company. We look forward with some confidence to a bright future, and if only our employees will frankly realise that their welfare is indissolubly bound up with the prosperity of the company, then our anticipation will be realised. Industrial strife, such as we have recently experienced, has never in the history of the world done anything but hinder progress and bring misery and unemployment in its train. Surely it is not too much to ask our employes to show an intelligent appreciation of the difficulties in working a mine like the Village Deep with its great depth and only moderate grade of ore.

The inexorable law of economics has proved the truth of my warning last year, that more work and less pay was better than no work and no pay. Even now, if we can only get our employes imbued with the true spirit to do their very best, there are greater possibilities still for this great industry. High wages or earnings are not everything in this world. I submit that contentment, settled conditions and security of tenure, are of equal, if not greater, importance, and it is in our workers own hands to bring about these happy conditions.

In conclusion I feel sure I am voicing the opinion of all our shareholders when I pay a tribute to the unswerving loyalty and devotion to duty shown by our manager, Mr. Whitehouse and staff during the recent troublous times. Only those, like myself, who were in personal touch almost every day with the officials of our mine during the strike, can truly appreciate the risks they ran and the difficulties they faced in your company's interest, and our grateful thanks are given to them for what they have done. I also wish to record our appreciation of the continued attention given to our mine by the consulting engineer, Mr. Stuart Martin, and the other head office officials.

I beg to move that the Directors' report, balance sheet and accounts for the year ended December 31, laid before the meeting, be received and adopted.

The Report and Accounts were duly adopted.

American Coal Strike.

In consequence of production of coal by non-unionists America has hitherto suffered little inconvenience from the coal strike, but the lowering of stocks caused a tendency to increased prices, which the Government intends to combat on the ground that supplies are assured for many weeks.

International Loan to Germany.

Mr. Pierpont Morgan and Mr. Otto Kahn, two of the foremost American bankers, have arrived in England, and will attend a conference of bankers in Paris, which will discuss the question of an international loan to Germany.

New Bank.

A new bank, entitled Barclay's Bank (Oversea), with a capital of £1,350,000, has been registered to carry on the business of Cox & Co. (France). Among the shareholders of the new bank are the National Bank of South Africa and the British Bank of South Africa.

On account of the holidays and delay in delivery of the mail papers our usual digest of technical literature and one or two other features are unavoidably excluded from this issue.

Princess Estate & Gold Mining Company, Limited.

(Registered under the Limited Liability Laws of the Transvaal.)

(IN LIQUIDATION.)

NOTICE TO SHAREHOLDERS.

NOTICE IS HEREBY GIVEN that a first Cash Distribution in respect of the Capital Assets of the Company will be at the rate of 1s. 2d. (One Shilling and Twopence) per share.

Shareholders desiring to obtain from the Liquidators the Cash Distribution to which they are entitled should forthwith surrender their Share Certificates and or Share Warrants to Bearer. The necessary Lodgment Form can be obtained at the Head Office of the Company on application.

Persons holding shares not registered in their names must, when surrendering their Scrip, see that the relative Transfer Deeds are duly stamped and completed.

The Transfer Books and Register of Members are now closed, except for the purpose of completing the Winding-up.

By Order,

UNION CORPORATION, LIMITED,
Secretaries to Liquidators
per J. McFADYEN.

Head Office: 94 Main Street
(P.O. Box 1125),
Johannesburg, 19th May, 1922.

CARBIDE

——ALL SIZES——
IN 1, 5, 10, 50 lb. TINS
and 100 lb. DRUMS

Apply: MANAGER,
RAND CARBIDE, LTD.,
SOUTH GERMISTON.
'Phone 252 Germiston.

RHODESIAN TEAK & MAHOGANY

FOR MINING & BUILDING PURPOSES,
ANT, ROT AND DAMP RESISTING.

Sleepers, Guide Blocks, Deals, Scantlings, Flooring (Machined for Secret Nailing) and all kinds of Purpose-Made Joinery, Fencing Posts, Etc.

PRICES MODERATE.

RHODESIA NATIVE TIMBER CONCESSIONS,
35, PERMANENT BUILDINGS, HARRISON STREET,
JOHANNESBURG.
Box 5530—Phone 3568—Yard: Eloff St. Extension

RIETFONTEIN & SABIE G.M. CO., LTD.

(Incorporated in the Transvaal.)

(IN VOLUNTARY LIQUIDATION.)

AN OPPORTUNITY FOR TRIBUTORS

The Machinery and Plant at present lying at the Rietfontein Mine, Sabie, is offered for sale.

There is also an opportunity for interested parties to arrange for a Tributors' Lease with the owners, for working the Mine with the above plant.

The Plant consists of a fully-equipped Ten Stamp Battery, Belting, Trucks, Rails, Wood and Iron Buildings, Wire Ropes, etc.

Full particulars can be obtained from the undersigned, to whom tenders should be addressed, marked "Tenders for Tributing."

Tenders will be received up to and including the 10th June, 1922.

By Order,
F. C. MEESER,
Liquidator.

Delmore, 18th May, 1922.

Roodepoort United Main Reef Gold Mining Co., Ltd.

TENDERS ARE HEREBY INVITED
FOR THE RIGHT TO PURCHASE OR TRIBUTE
the following portions of the Roodepoort United Mine

A. Kimberley East Section.
B. United Section.
C. No. 3 Section.

All these sections are equipped with hoisting plants headgears, track, trucks, etc., which can be taken over at a valuation, if desired.

Full particulars can be obtained from the Manager, Roodepoort United Main Reef G.M. Co., Ltd., P.O. Box 172, Roodepoort.

Tenders should reach the Technical Adviser, Box 1242, Johannesburg, not later than noon on FRIDAY 30th JUNE.

The highest, or any tender, will not necessarily be accepted.

NOW READY.

THE S.A. MINING YEAR BOOK

1921—22.

By S. R. POTTER.

The Standard Reference Work on South African Mines.

Price 21/- net. Post free 22/6. 250pp. In Cr. Folio, Cloth, Gilt Lettered.

Obtainable from the Office of this Paper or from Argus (S.A.) Newspapers, Ltd.
82-85, Fleet Street, London, E.C. 4.

A Recognised Indispensable Work of Reference.

For Mining Investors, Mining Engineers, Mine Managers, Bankers, Stockbrokers, Solicitors or anyone interested in the Mining Industry.

A RECORD OF INFORMATION concerning Mining Companies operating in all parts of South Africa, Gold, Diamond, Copper, Tin and other Mines, Collieries, Exploration, and Mining Investment Companies.

Data Twelve Months ahead of those in other Works of Reference.

Modderfontein B. Gold Mines, Ltd.

(Incorporated in the Transvaal.)

Head Office, The Corner House,
Johannesburg, May 24, 1922.

Dear Sir or Madam,

OFFER OF SHARES TO SHAREHOLDERS.

The Central Mining and Investment Corporation, Limited, having purchased from the Custodian of Enemy Property the shares of this Company held by him and by the Public Trustee, has arranged with the Board of this Company to offer to Shareholders at the price of £1 7s. 0d. per share (being the price paid by it) one share for every twelve shares held in this Company, no regard being paid to fractions. All expenses incidental to the transaction, including a commission of [illegible] per cent. payable to the Central Mining and Investment Corporation, Limited, will be paid by this Company.

Shareholders registered at the close of business on June 6, 1922, or being the holders of share warrants to bearer (provided that no application has already been made elsewhere in respect of the said shares) are now offered the shares in the proportion of one share for every twelve shares held at the price of £1 7s. 0d. per share, payable in full on application.

The share register of the Company will be closed from the 7th June to the 14th June, 1922, both days inclusive.

The attached form of acceptance, duly signed and accompanied by a Banker's draft or cheque on Johannesburg in favour of the Modderfontein B. Gold Mines, Limited, for the full amount of £1 7s. 0d. per share must be despatched so as to reach the Head Office of the Company, The Corner House, P.O. Box 2058, Johannesburg, not later than June 14, 1922, after which date no acceptance will be entertained.

Holders of Share Warrants to Bearer desiring to accept shares must deposit their Share Warrants, with a statement in writing of their names and addresses, at the Head Office of the Company on or before the 6th June, 1922. Each such holder will thereupon receive a separate form of acceptance, which must be duly completed and forwarded, accompanied by a Banker's draft or cheque on Johannesburg for the full amount of £1 7s. 0d. per share, so as to reach the Head Office of the Company not later than June 14, 1922. Warrants deposited will be released on and after June 16, 1922.

Shareholders will receive due notice when certificates are ready for delivery.—By Order of the Board,

RAND MINES, LIMITED, Secretaries,
Per S. C. STEIL.

New Modderfontein G. M. Co.

LIMITED.
(Incorporated in the Transvaal.)

Head Office, The Corner House,
Johannesburg, May 21, 1922.

Dear Sir or Madam,

OFFER OF SHARES TO SHAREHOLDERS.

The Central Mining and Investment Corporation, Limited, having purchased from the Custodian of Enemy Property the shares of this Company held by him and by the Public Trustee, has arranged with the Board of this Company to offer to Shareholders at the price of £3 6s. 3d. per share (being the price paid by it) one share for every five shares held in this Company, no regard being paid to fractions. All expenses incidental to the transaction, including a commission of 5 per cent. payable to the Central Mining and Investment Corporation, Limited, will be paid by this Company.

Shareholders registered at the close of business on June 6, 1922, or being the holders of share warrants to bearer (provided that no application has already been made elsewhere in respect of the said shares) are now offered the shares in the proportion of one share for every five shares held at the price of £3 6s. 3d. per share, payable in full on application.

The share register of the Company will be closed from the 7th June to the 14th June, 1922, both days inclusive.

The attached form of acceptance, duly signed and accompanied by a Banker's draft or cheque on Johannesburg in favour of the New Modderfontein Gold Mining Co., Ltd., for the full amount of £3 6s. 3d. per share must be despatched so as to reach the Head Office of the Company, The Corner House, P.O. Box 2058, Johannesburg, not later than the 14th June, 1922, after which date no acceptance will be entertained.

Holders of Share Warrants to Bearer desiring to accept shares must deposit their Share Warrants, with a statement in writing of their names and addresses, at the Head Office of the Company on or before the 6th June, 1922. Each such holder will thereupon receive a separate form of acceptance, which must be duly completed and forwarded, accompanied by a Banker's draft or cheque on Johannesburg for the full amount of £3 6s. 3d. per share, so as to reach the Head Office of the Company not later than June 14, 1922. Warrants deposited will be released on and after June 16, 1922.

Shareholders will receive due notice when certificates are ready for delivery.—By Order of the Board,

RAND MINES, LIMITED, Secretaries,
Per S. C. STEIL.

PARTNER WANTED:

Active or sleeping with £2,000 for afforestation scheme on an established farm in good timber growing district of Transvaal. If active partner, must be a gentleman and willing worker. The scheme is a good sound proposition for one who is desirous of investing funds as an endowment, either for himself or his children. There is an exceptional return for capital invested, and also the possibility of further opening out into another proposition run in conjunction with the farm, with a quicker return, and one which would have the backing of the District.

Write:- **"TIMBER"**

C/o SOUTH AFRICAN MINING & ENGINEERING JOURNAL,

P.O. Box 963. — JOHANNESBURG.

SUCCESSFUL
FINANCIAL PUBLICITY!

CONSULT

THE TECHNICAL PUBLICITY AGENCY.

Advertising Advisers, Contractors and Consultants. Specialised, Concentrated, Wasteless, Advertising Service.

Complete Advertising Campaigns Planned and Handled. "Copy" Prepared. Best Media Chosen. Lowest Prices and Best Positions Secured.

Company Flotations a Speciality.

Phone 913. Box 3723.
177, STOCK EXCHANGE, JOHANNESBURG.

THE ZEBRA DISAPPOINTMENT.

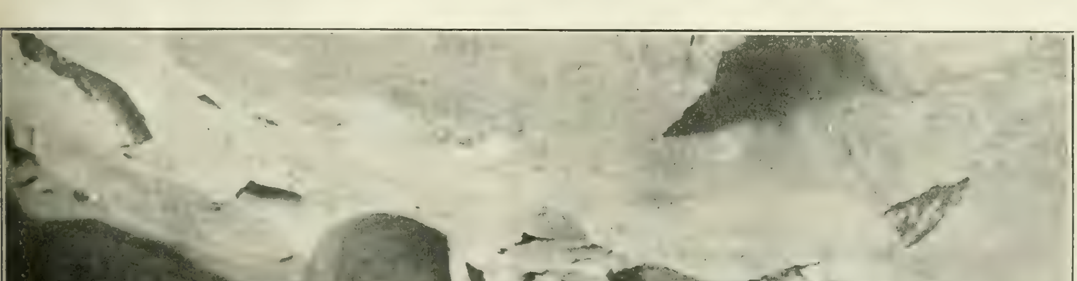
From time to time we have mentioned the considerable amount of trial work in the shape of trenching and sampling, that was being done by the Gold Fields (Rhodesian) Development Company on the Zebra property, near Hartley, says the "Bulawayo Chronicle." "We understand that the company has now relinquished its option on the property. Creditable reports which have reached us from various sources indicate that gold was found at several points on this hill, but the only possible deduction from the relinquishment of the option is that the values were not regarded as sufficient for the opening up of the big low-grade proposition, which had been hoped for. This, of course, need not prevent anyone else trying his luck in the locality."

Amsterdam Gold Fields—Electricity in South Africa—Congo Projects.

The South African
Mining & Engineering Journal
THE ONLY WEEKLY MINING PAPER IN THE CONTINENT OF AFRICA.
Established 1891.

Vol. XXXIII., Part I. JOHANNESBURG, TRANSVAAL, SATURDAY, JUNE 3, 1922. No. 1601.

"The Essential Kaffir."



A great deal of the evidence submitted to the Mining Industry Board has centred around the question of the relative abilities of Europeans and natives as miners. The above photo. recently taken in the bowels of a Rand mine, exhibits a machine boy at work in a stope. The latest evidence given before the Industrial Commission is referred to in this issue.

SIEMENS BROTHERS

& CO., LIMITED

MANUFACTURERS OF

CABLES
AND
WIRES.

OVERHEAD LINE
MATERIAL
AND
EQUIPMENT.

TELEGRAPHS
AND
TELEPHONES.
MANUAL AND AUTOMATIC.

SIGNALLING
APPARATUS,
FOR
RAILWAYS, MINES, SHIPS AND
POWER STATIONS.

JOINT BOXES
TAPES, COMPOUNDS, CABLE
ACCESSORIES, TOOLS, Etc.

PRIMARY
BATTERIES
FLUID AND DRY.
Carbons for Battery Making.

Representatives in South Africa:

A. J. G. SIMPSON, A.M.I.E.E.
African Life Buildings, 85, St. George's St.,
CAPE TOWN.
P.O. Box 239, Cape Town. Telephone 1202 Central.

G. H. B. BERNARD, A.M.I.E.E.
9-10, Cotts Buildings, Rissik and Fox Sts.,
JOHANNESBURG.
P. O. Box 7404, Johannesburg. Telephone 408 Central.

Telegrams : "SIEMENS."

Amsterdam Gold Fields.

IMPORTANT BANKET DISCOVERIES REPORTED—MR. WALLACH'S CLAIM HOLDING—MR. FRAMES ON THE GEOLOGY OF THE DISTRICT.

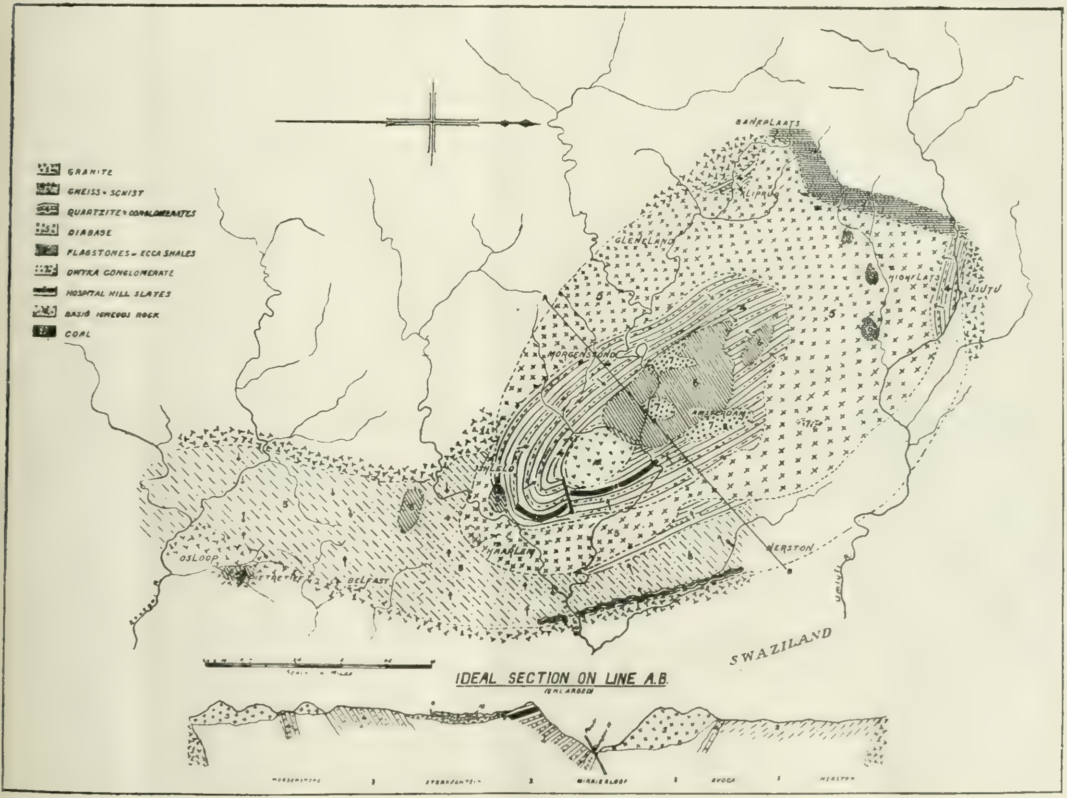
There is considerable excitement, both locally and in the Eastern Transvaal, in regard to banket discoveries in the vicinity of the village of Amsterdam. Preliminary development is stated to have disclosed excellent values, and Mr. B. Wallach and other gentlemen are understood to have acquired large claim holdings in the district. It is not at present possible to obtain any very detailed or exact information regarding latest developments on this outlying banket field, but the following precis of a paper, read before the Geological Society of South Africa by Mr. Minnett Frames so long ago as October, 1904, gives some interesting facts regarding the geology of the district.—

About twelve to fifteen miles to the north of Kliprug, the quartzites, with the Basal Conglomerate exceptionally well developed, are again found outcropping on the banks of the Usutu River on the farm of the same name. They rest on the old granite and dip at a high angle to the south-west, showing that between the points indicated there is a syncline. The axis of the syncline curves round towards the south-east, passing the village of Amsterdam, and finally terminating against the granite on the farm Ishlelo. The major axis of the syncline is about twenty-five miles, and the minor one twelve miles across Kliprug-Usutu section—but it gradually decreases until in the Amsterdam Valley it is only about four miles.

The synclinal trough is filled with diabase and other igneous rocks, Dwyka Conglomerate and Ecca Shales. Going from Kliprug in a south-easterly direction the outcrops of the quartzites can be traced only for a short distance before they disappear before surface deposits and diabase. Some of the overlying material closely resembles Dwyka Conglomerate boulders mixed with sand and detrital rocks—the boulders being probably derived from Dwyka Beds in the vicinity. From this point down to Athol, the prevailing rocks are of igneous origin, generally diabasic in character, but with other igneous masses, which appear to be intrusive in the diabase. On reaching Athol, sandstones and quartzites, with a few small conglomerate beds, younger than the quartzites of Kliprug, appear from beneath the igneous flows. It is noticeable that the igneous mass bifurcates, one limb accompanying the western and the other the eastern sedimentary outcrops forming the syncline.

On approaching the village of Amsterdam, shales, pink in colour, and fairly well laminated, are encountered, and close to the village these are found resting on typical Dwyka Conglomerate. From the evidence afforded in this section there is no doubt that these beds belong to the Ecca Shales, although their characteristics differ somewhat from the usual shales of the series. Typical Ecca Shales do, however, outcrop to the south-west of the village, and at one point the

TRANS. GEOL. SOC. S. AFRICA. VOL. VII. PLATE XXVII.



SOME NOTES ON THE GEOLOGY OF THE AMSTERDAM VALLEY AND THE SURROUNDING NEIGHBOURHOOD Mr. M. F. FRAMES

Amsterdam Gold Fields: Geological Section.

peculiar [illegible] [illegible] which have been noted in the Ecca Beds at various localities in South Africa, are to be seen exposed in the side of a donga.

From the village to Mount [illegible] in the south the country is a low valley, but soon rises into high land on the west, forming, further to the south, a precipitous cliff nearly 1,500 feet in height. This gives a clear section of the beds from the bed of the Compies River to the top of the group. The beds seem to have been slipped off and raised by an igneous intrusion to their present position; this view is supported by the presence of igneous masses at several points along the river bed and the high angle of dip on some sections at the base, which diminishes as one rises in the group. The facts are illustrated in the generalised section which accompanies this paper. There is a deep gorge along this fault line, down which the Compies River flows, and good examples of igneous protrusions are obtainable. It is highly probable that the strata in their true position lie buried beneath the diabase on the eastern bank of the river. The group consists almost entirely of quartzites with eleven distinct seams of conglomerate, but there are two inferior beds of shale high up in the beds and one near the base.

Witwatersrand Beds.

On the whole, these strata bear a close resemblance to the conglomerates and sandstones of the Upper Witwatersrand Beds, though from their position one arrives at the conclusion that they belong to the Lower Beds. The bedding plains in the quartzites are well developed, as are also the demarcation lines between the foot and hanging walls of the conglomerates. At the top of the series—in many places quite the top bed, in others overlaid by quartzites and inferior conglomerate seams—occur the Hospital Hill Slates. They are typically developed, the jasperised ribbon structure and the contorted features being here as well developed as on the Rand. The slates are well displayed on Kranskop; but perhaps their best occurrence is on Red Cliff and Cascade. They are also to be seen on the farm Madula in a similar position, relative to the quartzites and conglomerates in that area; but it is interesting to note that a beautiful example of knotted slate near the base of the group occurs on the banks of the stream on Madula, which is not exposed in the Amsterdam syncline. In many places the Hospital Hill Slates have been eroded in the Amsterdam area, but sometimes they are covered by igneous flows and sometimes by Dwyka Conglomerate and Ecca Shales. From the specimens exhibited, it will be seen that the conglomerates bear a close resemblance to those of the Upper Witwatersrand Beds, and I think there can be no doubt that the conditions during the laying down of these beds at Amsterdam were analogous with those that maintained during the deposition of the sandstones and conglomerates of the Upper Witwatersrand, but they are probably the same age as the Lower Witwatersrand Beds.

On the western side of the syncline on Morgenstond and Kolwani the quartzites do not outcrop so prominently as on the eastern line of the syncline, and their angle of dip is much higher. At these places shale fragments are abundant, whilst on the eastern side quartz and quartzite pebbles are more plentiful in the conglomerates.

Further to the south, the syncline terminates on Ishlelo and the strata are found dipping to the north, forming a detached syncline. At this end of the syncline they appear to rest almost directly on the granite of Edelgesteente.

From the evidence gathered during my visit, I arrived at the conclusion that the sedimentary beds have been broken up into a series of detached synclines.

Eleven Conglomerate Beds.

As stated, there are eleven conglomerate beds exposed in the terraced cliffs overhanging the Compies and Ishlelo Rivers. Many of these are small pebbled and of inferior development; a particularly characteristic black pebbled one is always found near the top of the group. There are, at least, three well-defined banket reefs containing pebbles of dark blue and white quartz, with a large proportion of quartzose cementing material between the pebbles and an abnormal amount of pyrites in stringers. This pyrites occurs in crystalline form, and also as "shot" pyrites of doubtful origin, but probably concretionary.

Crown Diamonds.

RECONSTRUCTION SCHEME—CONSULTING ENGINEER'S VIEWS.

In our advertising columns this week will be found details of the scheme whereby the Crown Diamond Mining and Exploration Co., Ltd., proposes to pay off its debt and raise working capital for reconstructing and extending the plant. The scheme seems very carefully devised to effect the objects in view, and it is guaranteed by the controlling house, which means that it will be successfully carried through. The advice of the consulting engineer, Mr. C. B. Kingston, is strongly in favour of the scheme, and a lengthy report by him, dated May 9, has been issued to the shareholders. Having reviewed the recent history of the mine, Mr. C. B. Kingston concludes: "It appears from the cleaner appearance of the blue ground exposed in the recent exploratory work and from the tests that have been made, that there are considerable sections of the mine, apart from the low grade central section, which may be expected to yield a large quantity of blue ground carrying an average of 10 carats or more per 100 loads. This can only be determined by working on a large scale. The prospects of success justify the expenditure upon the plant, and as it is impossible to continue the exploratory work indefinitely I strongly advise the Board to make the necessary financial arrangements and to proceed with the reconstruction and extension of the plant at once. So far as it is possible to determine by exploratory work and by test washings, there is enough blue ground in the better sections of the pipe to supply the new plant from open workings for the next five years, and with improved working conditions it is probable that this period will be considerably extended. While this work is being carried out the deeper levels of the mine can be thoroughly explored and tested. It has been found by the use of a grease table that the extraction of diamonds is increased to such an extent as to render the retreatment of accumulated deposit unnecessary. The rate of profit to be won clearly depends upon the market for diamonds as well as upon the working cost and the grade of the blue ground treated. It is estimated that the cost of working with the improved plant will not exceed 2s. 6d. per load, but every effort will be made to reduce the cost below this figure." The important factors in the undertaking being the grade of the blue ground, the cost of production and the selling price, a table has been prepared and attached to the report to show at a glance the effect of variation in any one of these factors.

THE CAM AND MOTOR.

It is understood that recent developments on the Cam and Motor mine, at the lowest level, have been of an exceedingly favourable nature, so much so that they have materially changed the outlook on that mine.

RELIABLE EXPORT FIRM WANTS

Thoroughly introduced Selling Agent for Steel and Iron Structural Work, Railway Rolling Stock and glass in any shape and form. Apply with references to **DEVOS & BAUGNIET, Kipdorp 21, Antwerp, BELGIUM.**

The Future of Electricity Supply in South Africa.

THE NEW ELECTRICITY BILL AND ITS FAILINGS—OPPOSITION FROM MANY QUARTERS IS THE INDUSTRY TO BE NATIONALISED?

Since the draft Electricity Bill reached us last week we have been unable to find anyone who has studied its provisions able to say a good word for it. Indeed, the Bill would seem to have no friends, and its contentious provisions have drawn from the Chamber of Mines a protest against such hasty legislation. Leading electrical engineers and the representatives of public bodies whom we have consulted are unanimous in their condemnation, and strong opposition to the Bill in its present form may be expected in Parliament.

Last year the Government issued a draft Electricity Bill and this aroused much opposition, mainly from local authorities who thought that their rights of supplying electricity within their own areas were being weakened. A conference was held in Johannesburg a year ago when the various objections to the draft Bill were put before the Government. Agreement was reached on most of the points in dispute. The Government has now issued the revised Bill. Briefly, it sets up two new bodies. One is the Electricity Supply Commission, whose duties will be: the establishment and working of undertakings for the efficient supply of electricity on a large scale at as low a cost as possible to Government departments including the railways and harbours, to local authorities, to companies and to industries; the investigation of new or additional electric supply within any area; and the better co-ordination and co-operation of existing undertakings, so as to stimulate a cheap and abundant supply. The Commission will consist of not less than three and not more than five members, one of whom must be a whole-time officer, all to be appointed by the Government. The undertakings under the Commission must be self supporting but the Treasury may advance loans, out of moneys voted by Parliament, to finance them during the first four years of their establishment. The second body to be set up is a controlling authority for the whole country, called the Electricity Control Board, to be formed of officers in the public service or under the Railway Administration. Its chief function will be to license electricity undertakings in the whole of the Union under certain conditions. An important provision is that surplus profits shall be shared with consumers. The Bill leaves the control of electric supply within their own areas to local authorities, saving existing rights, and thus meets the main opposition of last year. It still, however, leaves too much power in the hands of people who may or may not be properly fitted to exercise it, and it is understood that objections to the Bill on this and other grounds will immediately be laid before the Government.

Municipal Objections.

The Johannesburg Municipal Council, after a hurried examination of the Bill, has expressed its dissatisfaction with several of its provisions, and has arranged for a deputation of its members to proceed to Capetown and give evidence.

The Johannesburg Municipal Power Station, one of the undertakings affected by the Electricity Bill.

Question of Nationalisation.

Writing before the publication of the draft Bill, but with some knowledge of its main provisions, Mr. Bernard Price, who may be described as the leading authority on the matter, says, *inter alia*: "The Government has prepared draft legislation for submission to the present session of Parliament. At the moment of writing the draft Bill has not been published, but there can be little doubt that its provisions will give rise to an important debate on the broad question as to whether the power supply industry in this country should or should not be nationalised. The ownership and operation of the new generating stations now in contemplation must be settled forthwith and the decision on this question of general policy will seal the fate of power supply in this country.

' Reviewing the situation in other more highly-developed countries it will be found that the tendency is not in the direction of nationalisation; on the contrary, experience has shown that a specialised business of this character is better handled by private enterprise under adequate State control. A considerable measure of control is essential because electricity has become one of the more important public utilities and economic considerations make it desirable that the undertaker shall be given a virtual monopoly within his area of supply. Various methods have been adopted in different countries for ensuring that the interests of the community are adequatedy safeguarded and in the case of the huge undertakings on the Rand legislation for this purpose was promulgated in 1910 when the Transvaal Power Act became law. This Act has satisfactorally controlled the operations of these Power Companies for 12 years and it is presumed that the underlying principles on which that Act was framed will be incorporated in the new Union Act.

The Canadian Example.

" There is reason to fear, however, that the draft Bill when published will be found to foreshadow the establishment of a public body empowered to acquire and administer future and existing power undertakings within the Union. It is understood that the constitution and functions of this body are to follow generally those of the Ontario Power Commission in Canada, which is a body appointed by the Governor-General endowed with far-reaching powers of expropriation and authorised to expend moneys raised by way of loan on the credit of the Province. This Power Commission has been in existence for about 15 years and has built up a large transmission and distribution system fed by water power stations and supplying energy in bulk to numerous Municipalities and other consumers within the Province.

" It is claimed that in as much as the energy is sold by the Commission at cost, the charges to consumers are less than they would have been if private enterprise had been allowed to carry out the business. Any such statement is, of course, merely an *ex parte* expression of opinion and as it is impossible to make a direct comparison with the results which would have been achieved by private enterprise in the same area such claims should not be accepted hastily. If the assertion were true why is it that public opinion elsewhere is so strongly averse to State enterprise of this nature? Experience gained during the war, when conditions of extreme national emergency forced the State to take over the control and administration of many enterprises, has strengthened greatly this feeling against nationalisation. Few will deny that although a public body can sell at cost the stringent financial conditions imposed upon it largely offset the dividends which a private undertaking must pay to its shareholders and that any small balance remaining in favour of public enterprise on this score is much more outweighed by the serious lack of efficiency and enterprise which has so often characterised the operations of public undertakings and appears to be inseparable from them.

A Fatal Error.

" Power supply is a specialised and highly technical business and affords almost unlimited scope for enterprise and skill. Especially is this so in the case of a power undertaking which generates electricity in coal fired steam driven stations. Under such circumstances the cost of fuel represents a very large proportion of the total cost of production and it is only by research and technical ability of the highest order continuously applied that maximum efficiency can be obtained and maintained. The Ontario system is supplied from water power stations which involve no fuel cost. Efficiency then becomes a matter of minor significance because there are no boilers to operate and maintain and there is no coal to burn and pay for. The running expenses for such a system are confined to the wages of a few operating attendants and the maintenance of transmission lines and sub-station apparatus. Here in South Africa, however, very little water power is suitably located for profitable exploitation, and to base the future policy of the Union on an isolated example of public enterprise of this exceptional character would, in the opinion of the writer, be a fatal error.

" It is hoped that Parliament will realise the importance of this question, and that it will pause before committing the Union to the discredited policy of nationalisation."

Mining Men and Matters.

Mr. Owen Letcher, M.Inst.M.M., left on Thursday for Bulawayo in connection with the " Mining Journal's " big Year Book number.

* * *

At a dinner of past students of the University of the Witwatersrand, held at the Scientific and Technical Club on Saturday evening, Professor John Orr was presented with a tantalus as a slight token of the esteem in which he is held by the Old Students' Union.

In proposing the toast of Professor Orr, Mr. L. D. Hingle, president of the Old Students' Union, drew attention to the fact that he had been a veritable bulwark of the institution with which they were all proud to be connected for many years. At a time when his hearers were committing youthful indiscretions, Professor Orr joined the School of Mines in Kimberley. This was 25 years ago. Since then " Jock " Orr had been associated with the school until it blossomed forth into the University of the Witwatersrand.

Reference was then made to Professor Orr's public life and the many honourable positions he had held, after which Mr. Hingle asked the gathering to drink to the " Health, wealth and long life of Professor ' Jock ' Orr."

In replying, Professor Orr said that after 25 years of work it was very gratifying for him to attain to such friendship with his former students. The success of American universities, he stated, was due to the assistance given by Old Students' Unions. He urged the past students of the University to found a scholarship, and he looked forward to the day when he could number among his students the son of one of those present there that night. Many old students occupied good positions, and the time was fast approaching, he hoped, when all the important positions in the country would be held by South Africans. He was in favour of young Afrikanders going overseas after completing the University course in order to gain experience. He himself hoped to serve the University for a good many years yet. He would never forget their kindness that evening.

Mr. E. C. J. Meyer gave a resume of the life of the old School of Mines, and pointed out that the new University was attended by nearly a thousand students.

Professor J. H. Hofmeyr paid a tribute to the memory of Dr. G. S. Corstorphine, who unfortunately had died before his work to attain full University privileges for the Rand could be realised.

Sir William Dalrymple referred in glowing terms to the esteem in which Professor Orr was held by all branches of the University, after which Mr. H. J. Hofmeyr, President R. A. Lehfeldt and Professor Stanley addressed the gathering, which broke up at a late hour.

Five Typical Mines.

IMPORTANT EVIDENCE TO INDUSTRY BOARD— HOW HIGH COSTS LIMIT OPERATIONS.

Prominent in the tremendous mass of evidence tendered to the Mining Industry Board are the statements submitted in respect of five Corner House mines. These statements cover five independent gold mining companies, widely separated, but typical of the different mining conditions of the Rand. They are: Crown Mines, Ltd., Modderfontein East, Ltd., Durban Roodepoort Deep, Ltd., Village Deep, Ltd., and Nourse Mines, Ltd. They are submitted as evidence to emphasise the urgent necessity for an immediate reduction in working costs, which can only be attained by: (1) An ample supply of native labour; (2) freedom of management in the organisation of work; (3) absence of labour union restrictions; (4) sympathetic treatment on the part of the Government. Each of these mines, it is contended, has practically no margin of profit, and cannot continue operations unless substantial economies can be effected in every direction. The capital invested in these companies is considerable; they employ a large number of Europeans, and circulate a very large amount of money annually. They all have almost unlimited areas available for exploitation, and the extent of their lives depends only upon a condition of economic working. The case for the mines is stated clearly and convincingly; indeed to our mind the data submitted are expressed in a much more lucid manner than is customary in annual speeches from the chair and in directors' and engineer's reports.

Crown Mines .

The Crown Mines, Ltd., is an amalgamation of seven companies, and is worked under one management. The extent of the property on the strike of the reef is about three miles, with a similar extent on the dip, north and south. The milling capacity of the company's plant is 225,000 tons per month, or 2,700,000 tons per annum. The average number of employees at work during 1921 was 1,731 whites and 13,960 natives. The average tonnage milled per month during 1921 was 181,400 tons, as compared with the capacity of 225,000 tons per month. This was due to the shortage of natives and strikes amongst the white employees. The working costs for the years 1915 and 1921 were: for 1915 (on 2,497,000 tons milled at 16s. per ton) £2,017,791, and for 1921 (on 2,177,000 tons milled at 25s. per ton) £2,716,717. The ore reserves, calculated at December 31, 1921, were: 8,511,187 tons of an average value of 6·1 dwt. per ton (25·62s.). In addition to the above, there are fully developed in the mine 5,753,635 tons of an average value of 3·1 dwt., classed as unpayable. A material reduction in working costs would enable much of this ore to be worked at a profit, with a consequent increase in the life of the mine and with a greater scope for employment.

Modderfontein East.

The extent of the property is 1,450 mining claims, to which must be added a mynpacht equivalent to an area of between 800 and 1,000 claims. At the present time there has been opened up an area which measures about 12,000 feet on the dip of the reef and between 4,000 feet and 5,000 feet on the strike. The actual amount of development, driving, winzing, raising, etc., done by the new company is no less than 80,142 feet. The ore reserve position, calculated as at December 31, 1921, is as follows: (a) 5 dwt. and over 1,880,000 tons averaging 7·02 dwt. (29s. 6d.); (b) 4·4 dwt. and over 2,173,000 tons averaging 6·80 dwt. (28s. 7d.). The total amount expended on the equipment and development of the property by the former and present owners is as follows: Cloverfield Mines, £206,410; Rand Klip, £282,806; Modderfontein East, £1,396,599; total, £1,885,815. A sum of about £550,000 is required to build a reduction plant and complete the equipment of the mine, so that a total of at least £950,000 must be found if this property is to continue working. Development to date has proved the area to be exceedingly patchy, containing a considerable amount of barren ground. As the success of the mine depends upon the discovery of rich areas, so the future development of the vast and virgin areas in this neighbourhood depends very largely upon the success of the Modderfontein East. In the Government Mining Engineer's memorandum on the Far East Rand (1916), he estimates a possible yield of £450,000,000 in gold from the undeveloped areas of the Far East Rand, and the exploitation of a considerable section of this area depends on the success or failure of the Modderfontein East. Development to date indicates the probability of proving large blocks of 5 to 6 dwt. value, with occasional patches of high-grade ore. The closing of the mine would be very serious to the investors in the company, but this would be a small matter compared to the blow which would be dealt to the country, for it would in great measure discourage the flow of capital from Europe and the investing peoples of the world for the further exploitation of the Far East Rand. The reputation of the Far East Rand has already suffered by the closing of the Daggafontein mine, and the importance of keeping this mine running and of endeavouring in every possible way to bring it to a successful issue could not be too strongly emphasised. This can only be obtained by a considerable and permanent reduction in working costs and the raising of more capital to equip the mine on a larger scale. The most important conditions for success were: (a) That neither legislation nor trade union restrictions should prevent the economic working of the mine; (b) that there be no discontinuity in work due to industrial disturbance; (c) that an adequate and constant supply of native labour be available.

Durban Roodepoort Deep.

The Durban Roodepoort Deep, Ltd., is a mine which offers a most informative study to the Mining Industry Board for the following reasons: (a) It is a running mine with good development prospects; (b) it has declared no dividend since 1918 (then only 6d. per share); (c) it is without sufficient cash to carry on from month to month, this being supplied by the controlling house; (d) working costs are abnormal owing to the small scale of operations; (e) further capital expenditure is necessary for the development and working of the deep level area and extension of reduction plant; (f) it is the last existing mine with any future prospects in the neighbourhood (the Roodepoort United, though still working on a small scale, is in process of closing down), so that the Roodepoort district is almost entirely dependent upon the future of this mine; (g) given a future condition of economic working, there is opportunity for the inclusion of additional mining area, an extended scale of operations, and a successful future for the mine. The mine is working to-day on the same scale as it has worked for the last twelve years, development level by level has proceeded normally with stoping operations, and the reserves have varied very little in tonnage or value from year to year. The margin of profit was never very great, and the sole cause of the serious position in which the mine now finds itself is the considerable rise in working costs—about 10s. per ton milled in the last five years. The actual profit of 2s. 4d. per ton milled in 1921 would have been converted to a loss of 4s. 11d. per ton with gold at standard price. The rise in working costs put an end to the development programme for, in the face of an intervening period of monthly losses, it was impossible to raise the necessary further capital to complete the scheme. The ore reserves as calculated at December 31, 1921, amounted to 1,092,400 tons of an average value of 6·5 dwt., and from past experience a recovery of 6·7 dwt., or 28s. per ton [illegible], an annual profit of [illegible] could be estimated. There is a very small [illegible] between this and the cost working costs of 33s. 6d., but unless it can be bridged it is obviously impossible to keep going, the only alternative being to [illegible] the richest ore and then close down. The only way to prolong the life of the mine and to give it [illegible] is to push on with the new shaft and the development of the southern area. This, combined with an extended reduction plant and the [illegible] of adjoining ground, offers the only solution. As stated above, the company has no funds available for this progressive scheme; in order to carry it out further capital would have to be found. The estimate of the minimum sum required is £357,000. The prospects for raising this large sum of money are at present quite hopeless. Unless the working costs can be reduced and at any rate a small balance shown on the right side, it is impossible to expect that any further money will be forthcoming.

Village Deep.

The total capital sunk in this mine amounts to £2,091,178. The milling capacity of the plant is 54,000 tons per month, or 648,000 tons per annum. The average milled in 1921 was only 48,484 tons per month, due to the shortage of native labour and a strike of underground white employees in the month of February. The average number of employees working during 1921 was: Whites, 488; natives 3,634. In 1915 622,220 tons were milled at a cost of 19s. per ton (aggregating £590,395), and in 1921, 581,800 tons were milled at 29s. 5d. per ton (aggregating £856,519). Of the total annual expenditure of £856,519, the entire amount is expended in this country with the exception of the landed cost of imported stores; of the £282,781 spent on stores, £148,588 was expended on stores of South African origin. The profit declared for the year 1921 amounted to £112,746, the average price realised for gold being 105·2 shillings per ounce; the working costs were equivalent to 93s. per fine ounce of gold, and with gold at standard price would have resulted in a loss of £82,889 for the year's operations. The expenditure of £856,519 during the year 1921 does not include an amount of £12,876 paid in direct taxation, or £10,111 appropriated from profits and spent on capital account. After allowing for sundry items of revenue and expenditure, the actual profit accruing to the company on the year's operations was only £91,982, or 4½ per cent. of the actual capital sunk in the venture. The ore reserves recalculated at December 31, 1921, amounted to 2,087,717 tons, average value 6·3 dwt. per ton. In addition to the above, there are standing fully developed in the mine 1,862,056 tons of an average value of 3·6 dwt., now classed as unpayable. A material reduction in working costs would enable much of this ore to be worked at a profit, with a corresponding increase in the life of the mine. The life of the mine on its present claim holding, and assuming a satisfactory reduction of working costs, may be taken as 10 years from the present date. If this mine is to continue operations working costs must be brought down to this figure of 25s. 8d. per ton milled. Provided the company is allowed freedom of management, that is, freedom from Government and labour union restrictions, an ample supply of native labour and freedom from excessive taxation, the working costs can be brought down to a figure which will meet expenditure and leave a small margin of profit.

Nourse Mines.

The Nourse Mines were formed by the amalgamation of the Henry Nourse, an outcrop mine, and the Nourse Deep and South Nourse, deep level mines. As the outcrop mine was worked out it became necessary to equip the deep level portion, and an amount of £150,000 has been spent on this work in the last five years. It is probable that an equal amount will be called for during the next three years. This point is mentioned to emphasise the fact that the expenditure of the mine is by no means limited to what is known as the working expenditure. The Nourse Mines at the present time must make a working profit of £4,000 per month in order to balance the actual receipts and expenditure. On a milling basis of 50,000 tons per month the mine can employ about 400 Europeans and 4,200 natives. It is estimated that with a full supply of native labour and other favourable conditions the working costs can be reduced to 23s. per ton milled. The ore reserves as at June 30, 1921, were calculated to be 1,589,030 tons, of an average value of 6·9 dwt. per ton. In addition there is over 4,000,000 tons of developed ore standing in the mine which is unpayable at present, but with decreasing costs much of this will become profitable. On the basis of about 70 per cent. of the total milled being taken from the reserves, the actual recovering is about 6·5 dwt. per ton milled, which at standard price of gold equals 27s. 3d. per ton. The average costs for 1921 were 31s. 7d. per ton, and on this basis would show a loss of 4s. 4d. per ton milled. It is estimated that costs can be brought down to 23s., which would give a margin of profit of 4s. 3d. per ton or £120,000 per annum. From this would have to be deducted about £50,000 for taxation and abnormal expenditure on equipment. This mine is typical of the class called "low-grade." It could not continue to work under past conditions of high working costs, and even under more favourable ones will do little more than exist for the benefit of the employees and the country. The shareholders can expect very little further return on their invested money; yet this mine is one with a highly efficient staff, a modern plant and a very valuable tonnage of developed ore, together with undeveloped ground which would ensure a life of at least twenty years under reasonable working conditions.

INVESTORS' DIARY.

Forthcoming Company Meetings.

(a) Annual general meeting; (s) special or extraordinary general meeting.

Meetings will be held in Johannesburg unless otherwise stated.

June 3.—Transvaal Coal Corporation, (a), 10.30 a.m.; Anglo-American Corporation, (a), 11 a.m.

June 8.—Meyer and Charlton, (a), 11 a.m.; New Primrose, (a), 11.30 a.m.; New Unified, (a), 11.45 a.m.; Langlaagte Estate, (a), 12 noon; New Goch, (a), 12 noon; Randfontein Central, (a), 3 p.m.; Roodepoort United, (a), 3 p.m.; Randfontein Estates, (a), 3.30 p.m.; West Rand Consolidated, (a), 4 p.m.

June 9.—Consolidated Langlaagte Mines, (a), 10.30 a.m.; Witwatersrand G.M. Co., (a), 10.50 a.m.; Cinderella Consolidated, (a), 11 a.m.; Aurora West United, (a), 12 noon; New State Areas, (a), 2.40 p.m.; Van Ryn Deep, (a), 3 p.m.; Rand Collieries, (a), 3 p.m.; New Steyn Estate, (a), 3.30 p.m.; Government Areas, (a), 3.45 p.m.; Sacke Estates, (a), 4 p.m.

June 30.—Crown Diamonds, (a), 12 noon.

GOVERNMENT EXAMINATIONS.
METAL. RESULTS, 1921. COAL.

Total METAL MANAGERS Certificates

Granted in S.A., 1921	36
Secured by Students of Messrs. LUCAS & WOLFE ..	21
Balance for S.A.	15

7 COAL MANAGERS Certificates obtained in 1921.

Total OVERSEERS Certificates (Metal and Coal)

Granted in S.A., 1921	61
Secured by Students of Messrs. LUCAS & WOLFE .	25
Balance for S.A.	36

Total SURVEY Certificates

Granted in S.A., 1921	11
Secured by Students of Messrs. LUCAS & WOLFE ..	9
Balance for S.A.	2

C. D. LUCAS & B. E. WOLFE,
MINING ENGINEERS.
OFFICES & LECTURE ROOMS: PERMANENT BUILDINGS.
Postal Address: Box 6301. JOHANNESBURG

Albu Mines.

A YEAR'S RESULTS SUMMARISED.

Aurora West.

The total revenue of Aurora West United Gold Mining Company for 1921 was £175,625 (including premium on gold), and working expenditure was £167,415, resulting in profit of £8,210, less £1,973 interest on loans, leaving £6,237. Accounts show excess of liquid assets over current liabilities of £143; 122,410 tons were crushed, yielding gold, etc., to value of £173,973 (28·42s. per ton). Working costs amounted to £167,414 (27·35s. per ton), showing profit on mining operations of £6,559 (1·07s. per ton). Yield showed increase of 0·93s. per ton, and working costs decrease of 0·04s. per ton crushed. Fully developed payable ore reserves at 31st December are estimated at 136,700 mining tons, of average value of 6·9 dwts. per ton over width of 42 ins.

New Goch.

The report of New Goch Gold Mines for 1921 shows revenue £241,585 (including premium on gold). Working expenditure was £227,218, leaving gross profit £14,367. This (together with £532 transferred from revenue appropriated for capital expenditure), added to balance of £94,876 brought forward, gives total of £109,775. After deduction of £133 in respect of French taxes and arbitration fees in connection with City Deep Claims, there remains to be carried forward £109,642; 196,200 tons were crushed, yielding gold to value of £237,571 (24·22s. per ton). Working costs totalled £227,218 (23·16s. per ton), resulting in profit from mining operations of £10,353 (1·06s. per ton). Yield shows increase of 0·08s. per ton and working costs decrease of 0·71s. per ton milled. Fully-developed payable ore reserves at 31st December are estimated at 47,479 mining tons of average value of 6·7 dwts., calculated over average width of 44 ins. Working profit, including sundry revenue, shows increase of £7,045, in spite of considerable fall in price of gold. Balance of appropriation account of £109,641 is not available for distribution, as expenditure on shaft sinking and development in connection with claims leased from City Deep has absorbed £40,174 of this amount, and balance represents cash and other liquid assets required for carrying on business of company.

Meyer and Charlton.

Revenue of Meyer and Charlton G.M. Company for 1921 amounted to £531,970 (including premium on gold) and expenditure to £219,040, leaving gross profit £312,931, plus £161,669 brought forward, making £474,600. Dividends Nos. 63, of 50 per cent., and 64, of 50 per cent., absorbed £200,000; income tax (estimated) payable for 1921, £19,182; estimated percentage due to Government in respect of undermining rights of Bewaarplaatsen, etc., £31,300; dividend tax, £15,770; provincial gold profits tax (estimated) payable, £10,207; French taxes, £1,462; depreciation on investments, £1,500 appropriated for capital expenditure, £2,885, leaving to be carried forward £192,365. Full mill ran 319·20 days, crushed 163,200 tons, yielding gold to value of £512,440, equal to 62·80s. per ton. Profit on mining was £293,400 (35·96s. per ton). Recovery shows decrease of 8·02s per ton and working costs decrease of 0·84s. per ton. Fully developed payable ore reserves at December 31, are estimated at 395,867 mining tons of average value of 13·77 dwts. over average stoping width of 56·3 ins. These reserves have been paid for out of past profits.

Sacke Estates.

Revenue for 1921 amounted to £3,076 and general expenditure to £1,043, leaving profit of £2,032; £5,083 has been written off certain investments. Excess of liquid assets over liabilities is £64,236. Investments being mostly in companies which are inactive at present, are not necessarily represented in balance-sheet at their intrinsic value.

New Steyn Estate.

Revenue for 1921 from interest, licences and rent was £4,094 and expenditure, including cost of administration, claim licences and taxes, £4,232, leaving net loss of £137, which deducted from balance brought forward leaves credit balance of £48,496 to be carried forward. Reserve account of £54,473 formed from premiums received from issue of shares is unchanged. Excess of liquid assets over liabilities is £71,296. Mining areas held are still dormant.

Roodepoort United Main Reef.

Revenue for 1921 amounted to £276,812 (including premium on gold) and operating expenditure to £285,759, resulting in loss of £8,956. This, together with £28,790 for interest on loans, gives total loss of £37,747, to be deducted from £52,828 brought forward leaving credit of £15,080 to be carried forward. During year an average of 65 stamps ran 241 days, crushed 259,650 tons of ore, yielding gold, etc., to the value of £272,300, or 20·97s. per ton. Loss from mining operations was £13,468 (1·04s. per ton). Payable ore reserves are estimated at 83,772 mining tons of fully developed ore of an average mine value of 6·0 dwts. over 40 ins. It is probable, therefore, that mine will be closed down entirely in June next.

Cinderella Consolidated.

The report of Cinderella Consolidated Gold Mines for 1921 states that Debenture issue remains unaltered at £500,000, interest and redemption being deferred until 1st December, 1924, in terms of resolution passed at meeting of Debenture holders held in London on 20th June, 1921. Financial position at close of year shows excess of current liabilities over liquid assets of £183,833. Financial and mining conditions are still of such a nature as to preclude restarting of active operations.

Rand Collieries.

The accounts of Rand Collieries for 1921 show revenue from rents, etc., £1,911. General expenses at mine and head office totalled £2,012 and interest on advances amounted to £15,964. Company's liability to General Mining and Finance Corporation at close of year in respect of advances made was £207,807. There has been no change in financial conditions such as would have justified directors in formulating an active programme in regard to the mining area held.

Letters to the Editor.

A "REPLY" TO "DIAMOND MINER."

To the Editor, *S.A. Mining and Engineering Journal*

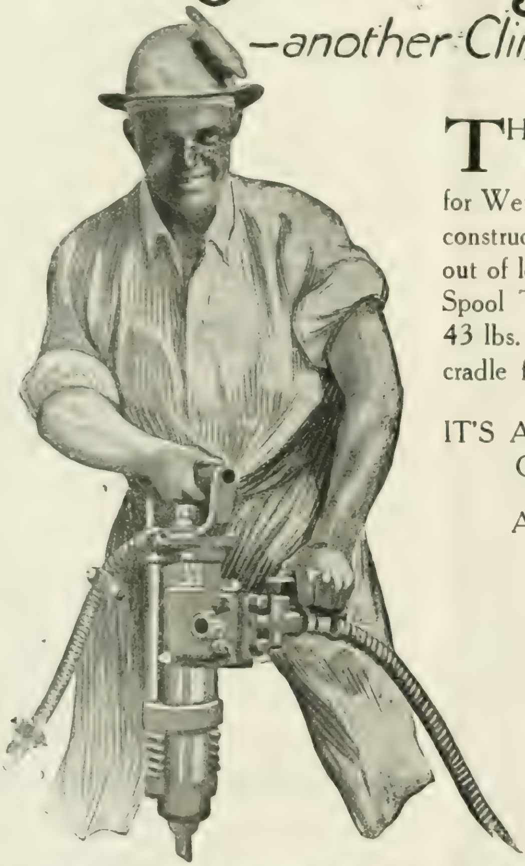
Sir,—In reply to "Diamond Miner's" query, the Chatteris Engineering Company, Cambridgeshire, England, make drums in pairs, spiked, and geared together so that one drum turns twice as fast as its companion. I dare say that same can be seen at the Premier Diamond Mine (Transvaal). An adaptation of the centrifugal brush machines as used for cleaning bran, has given satisfaction where clay just gave trouble in washing old-yellow ground tailings. The Vaal River bedclays treatment due to gravel up to 1 in. or ¾ in. diameter being necessary, component parts form no easy solution on a large and payable scale. Rubbing twixt the hands clay known to contain diamonds still forms a part of the business. In rotary pan washing clay packs up on outside and inner rims of pan, break off, forms into balls and carries away diamonds. Perhaps a big admixture of red sand would help washing operations. Probably the best plan would be to leave the Vaal River clays alone.—Yours faithfully,

P. MACADAM.

[We hardly think that this is the reply our correspondent desired.—Ed., "S.A.M. & E.J."]

The "Joburg" No 1

—another Climax Success



THE JOBURG 1 is a sturdy little Hand Hammer Drill for Wet or Dry Drilling and is constructed to get the most work out of low pressure. Fitted with Spool Type Valve. Weight, 43 lbs. Can be mounted on cradle for driving.

IT'S ALL IN THE BUILD OF THE DRILL.

Ask for Particulars.

Climax Sam.

Save your Bills—
Climax Drills
British —— from
Handle to Steel-Point

CLIMAX DRILLS

THE CLIMAX ROCK DRILL & ENGINEERING WORKS LTD
4, Broad Street Place, London. E.C.2., Works:—Carn Brea, Cornwall
(INCORPORATED IN GREAT BRITAIN).

LOCAL ADDRESS :—

49, Stella Buildings, cor. of Rissik and New Sts.,
JOHANNESBURG.

P.O. Box 4256. Telegrams : "Thumbscrew." Telephone 2794.

Finance and Information for Investors.

AN EXAMINATION OF BALANCE SHEETS AND REPORTS—DATA FOR SHAREHOLDERS.

A New Bank.

In the late issue of the *Government Gazette* appears a statment concerning the affairs of the Commercial Bank of South Africa, Ltd., Capetown. The chairman of the board of directors is Dr. Max Rhode, and the manager is Mr O. Schutt. The subscribed capital is £25,802, and the paid-up capital is £10,000. The total assets amount to £169,966 and the deposits stand at just on £79,000. The bank seems to confine its operations to Capetown and Germany.

Latest Money Market Position.

The Rand Water Board issue of £400,000 in London is to be made at 93½, not 93 as stated last week, carrying interest at 5 per cent. The general managers of the Standard Bank of South Africa, Ltd., have received the following cable from the London offices of the bank: "The money market has remained steady, with discount rates ruling at 2¼ per cent. to 2⅜ per cent., but short loans are very easy at anything between 1 per cent. and 2 per cent. The Treasury are now offering 10-year Treasury Bonds at 4½ per cent., and two Colonial Loans have also appeared, bearing interest at 4½ per cent., and offered at 95 per cent. It is considered that rate of interest is too low for the present, but it is expected that cheap money will render the rates effective later on. Foreign exchange business is much reduced, and all important rates much steadier. The Stock Exchange still feels the effect of the wave of cheap money, and most investment issues are distinctly higher under lead of war loan and conversion. From May 22 the House resumed dealings for the account for most securities, and this has caused tremors. Such dealings imply carrying-over facilities, and this points to the return of the "Bear" to the market. For this reason foreign bonds are lower, and some of the new scrips have suffered. Home railway stocks have been pushed up on speculative buying, but industrial shares have lost some of their recent improvement. Oil shares have fallen on the threat of the "Bear." Mines are firmer on the better conditions and the arrangement of ex-enemy share positions.

Mistakes in the Cables.

London share quotations as cabled out to the daily papers are continually exhibiting mistakes. A correspondent of the Kimberley paper puts the matter as follows:—"I should like to direct attention to the unreliable information furnished to the Press through Reuter's Agency regarding the price of diamond shares. De Beers Deferred are being constantly quoted at absurd prices. For example, according to Reuter, the closing middle price on the 16th inst., was £10 10s., on the 17th £11 17s. 6d., and on the 18th £11, none of the three being correct, although the quotation for the 17th was only about one-eighth out. As a matter of fact there was very little difference in the closing prices for the three days, these averaging from £11 12s. 6d. to £11 15s. Again, Jagers on the 16th were quoted at £2 15s., a rise of 7s. 6d., but in this case a return was made to normal on the following day. At the end of last year and the beginning of this New Modders were for weeks quoted 10s. below the correct London price, and many other ridiculous blunders might be cited."

The Government and the National Bank.

The National Bank figured in the Assembly last week when Brig.-General Byron asked the Minister of Finance: (1) What was the state of the Union Government balance with the National Bank of South Africa, Limited, (a) on the 31st March, 1922; (b) at present, or on the latest date available; and (2) (a) how many shares in this bank are held by the Public Debt Commissioner; and (b) what was the average purchase price of these shares? The reply was: (1) (a) At 31st March, 1922: Exchequer, £438,724; High Commissioner in London, £111,139; Public Debt Commissioners, £2,001; Railways and Harbours, £74,871; total, £626,735; (b) at 30th April, 1922: Exchequer, £219,515; High Commissioner in London, £1,504,000; Public Debt Commissioners, £10,159; Railways and Harbours, £127,867; total, £1,861,541. The Minister added: "The Paymaster-General's balances are not included in the above figures, as warrants issued by disbursing officers, but not presented to the Treasury on the dates specified, are not known. (2) (a) 2,820 shares of £10 each; (b) £10 a share. I do not know the motive underlying the honourable member's question, but I am grateful to him for giving me the opportunity of saying that the Government appreciates the courageous action of the bank's directorate in making provision for all bad and doubtful debts at the sacrifice of a dividend and a portion of the reserve fund, and is satisfied that the bank's position is strong and healthy, that its affairs are being conducted with ability and discretion, and that consequently there are no grounds whatever for anxiety in connection with it."

New Transvaal Chemical Finances.

The New Transvaal Chemical Company's report brings affairs up to June 30 last. The profit total is £7,625 lower at £70,567. This decline has occasioned the lowering of the dividend on the issued Ordinary capital of £250,000 from 17½ to 15 per cent., and a reduction of the carry-forward from £7,873 to £6,254. The amount allocated to depreciation account is, however, raised from £9,680 to £10,057. Some changes have occurred in the balance-sheet figures, as will be seen by the following comparisons:—

	1920.	1921.
Dr.	£	£
Creditors	£196,528	£209,230
Depreciation account	33,306	39,564
Banker's advances against security	24,355	129,026
Cr.		
Cash ...	95,914	15,955
Bills receivable	20,208	18,704
Debtors	153,013	106,579
Investments in and loans to associated companies ...	517,232	618,418
Stocks and stores	25,236	142,362
Works, premises, plant, etc.	127,909	154,242

A small increase in creditors is accompanied by a considerable addition to the advances obtained from bankers against security. Liquid resources are reduced, cash having fallen to the extent of nearly £80,000, while debtors are lower by upwards of £50,000. On the other hand, investments in and loans to subsidiary companies have been enlarged to the extent of over £100,000 stocks and stores on hand and in transit have gone up by £117,126, and works, premises, plant, etc., stand in the account at £26,333 more. Stocks are stated to have been valued at prices, which, as far as can be foreseen, provide against possible loss from depreciation or other causes.

MINES DEPT. EXAMS.
CERTIFICATES AWARDED INSTITUTE.
MANAGERS' EXAMS., September, 1921, January, 1922.
We obtained 15 out of a total 22 certificates awarded in South Africa

	Metal	Coal	Totals
Ours	9	6	15
Rest of S.A.	4	3	7
	Total for S.A.		22

OVERSEERS' CERTIFICATES.
During the past ten months we have secured **ALL** the Overseers' Certificates issued in South Africa, except 3 metal and 3 coal.
TUITION (Metal or Coal) by class, correspondence or privately
Mining Institute (Prof. Yates),
St. James' Mansions, Eloff St. Johannesburg

To Lower your Operating Costs:

A Lubrication Audit

Business to-day protects itself against waste and inefficient methods—by audit.

An audit gives an exact picture of present conditions, and points the way to improvement.

We would like to call to your attention the possibilities of a Lubrication Audit in your plant.

See details in column.

Only a Lubrication Audit can give you full information, and open the way to new economies which will soon be reflected in lower operating costs.

Present industrial conditions make it urgent that you take this step toward improved results at once. Ask our nearest branch today about the Lubrication Audit.

GARGOYLE

Lubricants

A grade for each type of service

THE LUBRICATION AUDIT

Explained Step by Step (in condensed outline)

INSPECTION: A thoroughly experienced Vacum Oil Company of S.A. Limited, representative in co-operation with your plant engineer or superintendent makes a careful survey and record of your mechanical equipment and operating conditions.

RECOMMENDATIONS: We later specify in a written report, the correct oil and the correct application of the oil for the efficient and economical operation of each engine and machine. This report is based on:

(1). The inspection of the machines in your plant.
(2). Your operating conditions.
(3). Our 25 years of lubricating experience with all types of mechanical equipment under all kinds of operating conditions.
(4). The outstanding experience of the Vacuum Oil Company in manufacturing oils for every lubricating need.

CHECKING:—If, following our recommendations in this audit, you instal our oils, periodical calls will be made to check up the continuance of the desired results.
For the above Free Service address our nearest branch office.

BRANCH OFFICES:

Cape Town **Johannesburg** **Pretoria**
Kimberley **Bloemfontein** **Mossel Bay**
Port Elizabeth **East London** **Durban**
Lourenco Marques.

VACUUM OIL COMPANY OF SOUTH AFRICA, LTD.

"HUMBLE" SAFETY DETACHING HOOK

SOLE AGENTS:

GEO. CRADOCK
—AND CO. (S.A.), LTD.—
75-77, CULLINAN BUILDINGS.

P.O. Box 316. Telephone 539.
Tel. Add.: "ROPES."
JOHANNESBURG.

REID BROS.
— (S.A.), LIMITED. —

Sole Agents for:

CARRON COY.—HAULAGE GEARS, Etc.
ANDERSON, BOYES & COY.—ELECTRIC COAL CUTTERS.
HARDY PATENT PICK COY.—"HARDIAX" AIR COAL CUTTERS.
BLANTYRE ENGINEERING COY.—SCREENING PLANT.
WM. ARNOTT & CO.—CORNISH AND LANCASHIRE BOILERS.
QUASI-ARC ELECTRIC WELDING APPARATUS.
SMALL & PARKES—BELTING, PACKING, Etc.
FINNEY PATENT HAND PUMPS.
WELDLESS STEEL CHAINS.
CHAPMAN DOUBLE BALL BEARINGS.

JOHANNESBURG.
P.O. Box 802 'Phones 6070/1
AND AT DURBAN.

The South African Mining and Engineering Journal.

HEAD OFFICE: 176-180 Stock Exchange Buildings (2nd Floor), Fox Street, JOHANNESBURG, Union of South Africa.

Telephone **913.** P.O. Boxes **963** and **4573.**

Cables and Telegraphic Address: "MINING JOURNAL."

ANNUAL SUBSCRIPTION RATES: Oversea, £2; Union of South Africa and Rhodesia, £1 10s.; Local Delivery (Town only), £1 6s., payable in advance.

AGENTS FOR GREAT BRITAIN AND AMERICA: Argus South African Newspapers, Ltd., Byron House, 82-85, Fleet Street, London, E.C. 4.

Copies of this Journal are obtainable at all Branches and Agencies of the Central News Agency, Ltd., at all News Agents and Railway Bookstalls throughout South Africa, and at the London Agency as above.

CONTENTS. PAGE

Amsterdam Gold Fields ... 1319
Crown Diamonds ... 1320
The Future of Electricity Supply in South Africa...... 1321
Five Typical Mines ... 1323
The Year with the Albu Mines ... 1325
Finance and Information for Investors 1327
Topics of the Week ... 1929-1331
Where Our Gold Goes ... 1332

Rhodesian Section:

Rhodesian Mining: A Year's Progress 1333
Belgian Congo: Congo's Developments 1335
The Week in the Sharemarket 1339

Engineering Section:

Railway Electrification and Industrial Development ... 1340

Trade and Industries Section:

The Week in the Mining Material and Engineering Trades 1341
Company Meetings: City Deep, Robinson G.M. Co., Knight Central, Brakpan Mines, Daggafontein Mines, New Era Consolidated, Rand Selection, Springs Mines, West Springs, Union Corporation, Geduld Proprietary Mines, Modderfontein Deep Levels. i

TOPICS OF THE WEEK.

Another Mining Conference?

At the sitting of the Mining Industry Board on Monday Sir Evelyn Wallers, Mr. Stuart Martin, Mr. James Whitehouse and Mr. A. T. Walton were cross-examined at considerable length on the evidence submitted by the Corner House to the Commission. In the course of the examination Mr. Brace said it was scarcely reasonable in these democratic days for any body of employers to dictate whom they would or would not meet to discuss such matters, if the men by private ballot nominated certain individuals. There were many men he would prefer to meet as against those he did not like to meet, but, after all, there was not much sentiment in business, and he pleaded with Sir Evelyn to act as ambassador to the gold mining industry generally to ask them if they would be willing to meet a delegation of the men to endeavour to establish some form of machinery to function up to the final issue. They might meet as mine owners and men, and if they could evolve a scheme between themselves, so much the better, but if they cared to ask the members of the Commission to join, then he, for one, would be only too pleased to place his services at the disposal of such a joint conference.

Sir Evelyn Wallers thought the suggestion a good one, and though he had felt that there was no hurry in the setting up of new machinery, he realised that Mr. Brace's special experience in these matters and the knowledge of the other members of the Commission would be very helpful. From that point of view he thought something might be done.

Mr. Brace: I am most anxious to see it done, and I gather that if the Commission asked for it it might be done. The services of the Commission are at your disposal if you would like such a conference.

Sir Evelyn Wallers: For myself, yes.

Mr. Brace: And you think such a conference might contain a promise of fixing up a satisfactory system for the peaceful future settlement of the grievances of the mining industry of the Rand?

Sir Evelyn Wallers: Yes, I hope so.

"Six Days Shalt Thou Labour."

If mining on the Witwatersrand is in reality such a hazardous and unhealthy occupation as some of the witnesses who have tendered evidence to the Mining Industry Board have painted it to be, the sooner the recommendation of the Unemployment Commission is adopted and most of the European employees of the industry are forbidden to earn a perilous living underground in the future the better. Mr. Price, of the Mine Workers' Union, in giving evidence the other day, stated that his Union was in favour of a five days' week of 40 hours. Mr. Stuart Martin's illuminating evidence, which was reproduced in our last issue, showed how efficiency had been impaired by a reduction of working hours to the six day 48 hour bank to bank week, and it is obvious that Mr. Price's recommendation would result in such a rise in working expenses that a number of mines would soon be put back into such a critical condition that complete cessation of operations would again fill the industrial picture. Just as there is an old and time-honoured commandment which proclaims one day in the seven as a day of rest, so too is there an old Biblical precept which enjoins man to work for six days. If conditions in the workings of the Witwatersrand are so unpleasant that a white man cannot work for six days and for 48 hours in the week, the sooner he changes the venue of his employment the better, for it is certain that a low grade industry already overburdened with artificialities cannot stand a further immense handicap in the shape of only five days' work a week, with all the limitations upon the work of the native force which such a ca' canny policy would bring in its train

Wild and Woolly South Africa.

Sir Edgar Walton made a timely appeal in London the other day for more thinking and clearer thinking in regard to the Dominions. General Smuts urged much the same thing in his contribution to the Empire number of "The Times." Obviously the best medium for education is the Press, and if the English papers serve up to the general public overseas such clotted nonsense as recently has been cabled out to the local Press, one cannot be surprised if people in Europe imagine that the Rand is a sort of wild and woolly west, that Johannesburg is a patch of jungle full of assassins, lions and pythons, that all the inhabitants of the Union are black, and that South African soldiers affect the habiliments of the Pathans or the Waziris. One of the greatest needs of Empire or—if you will since some people object to the grand old word—the Commonwealth of Nations, is a campaign of intelligent propaganda which will enable all the inhabitants of that Commonwealth to visualise the conditions obtaining in other Dominions and the characters of the people inhabiting them. The Press can do much in this respect. So can the cinema screen. Sane publicity in these directions would soon dispel much of the [illegible] which has probably startled the [illegible] than [illegible]

Knight Central.

The unfortunate history of the Knight Central was related by the chairman, Mr. [illegible], at the annual meeting of the company this week. As an example of the vicissitudes of mining [illegible] on the Rand the mine can hardly be beaten; and the chairman's speech might with advantage be sent in as evidence before the Mining Industry Board. The chairman pointed out that the sum already paid in dividends, and the cash and cash assets (total of which is £293,176), plus the break-up value of the plant when the mine closes down, is about all the shareholders will get—a return of 27 per cent. on an investment of £847,000, that is they will lose more than half the capital put up, and have nothing for interest on the working capital provided, without taking into account any sum for the purchase of the claims owned by the company. Interest at 6 per cent. per annum provided should have returned over £1,000,000 to shareholders. During the period referred to the company has expended the following sums: On capital expenditure, £1,096,000, on working costs £4,021,800, on taxes, £17,800; total, £5,135,600—practically the whole of which has been spent on wages, plant, stores, etc. The life of the mine is now very limited, and the future most uncertain. A discussion on the question of paying a dividend led to a poll being taken, with the result that no votes were cast in favour of the suggestion.

The Union Corporation Group.

Mr. P. M. Anderson, the new manager of the Union Corporation Group, was able to make his speeches from the chair at the annual meetings, under most favourable auspices. The Modder Deep, of course, continues to do well, and the mine maintains its reputation as one of the soundest propositions on the Rand. The Geduld goes on improving its position, and gradually working up to a scale of operations commensurate with the size and value of the mine. The ore reserves have materially, improved. The consulting engineer estimtes that the saving in working costs should be between 5s. and 6s. per ton compared with the average costs for 1921, and estimates the quantity of the low grade ore at 2½ million tons. If this can be added to the previously published reserve of high grade ore, it would bring the total payable ore now available to 6,000,000 tons, having an assay value of 6·6 dwts. over 61 inches stope width. It is not intended that ore of this average stope value should be sent to the enlarged plant, but rather to rely on being able to maintain a supply of the higher grade ore. In this low grade ore the company has a valuable asset. The enlarged plant—details of which have already been given—is expected to be in commission in the early part of next year. There will be no radical change in the method of ore treatment. It is, however, intended to crush the ore much finer than is now being done, resulting in a higher proportion of slime and a lower value of residues. The cost of the plant will be rather more than a simple addition to treat 25,000 tons per month would have involved, as the finer crushing will apply not only to the additional ore but also to the ore treated in the existing plant. The funds available at the beginning of this year, as disclosed in the balance-sheet, are sufficient to cover the capital expenditure programme sanctioned by the Board in connection with completing the equipment and underground layout at No. 7 shaft, the surface transport arrangements, and the new plant. With two such excellent properties as the Modder Deep and Geduld the prospects of the Union Corporation are of the brightest; and the shareholedrs have every reason to anticipate even better returns in the future.

The "C.M.S." Group.

The annual meetings of all the companies of the Consolidated Mines Selection-Anglo-American Group—except the parent companies themselves—were held this week, and full reports of the speeches are printed elsewhere in this issue. Perhaps the most interesting meeting was that of Springs Mines, where the chairman, Mr. F. R. Lynch, reviewed the development of the mine, and announced that the reduction plant, would be further increased to a 60,000 tons per month capacity. The extension will be effected economically and expeditiously by the "all sliming" process already adopted at this mine, and we hope to print some further details of the plant in an early issue. For obvious reasons, the chairman could not make his usual forecast of the current year. But he said: "Based on operations for the first few months, we hope very shortly to obtain a full complement of native labour, to have our increased plant in operation, and then gradually to increase our tonnage to its maximum figure. It is gratifying, however, to be in a position to tell you that the good development to which I have referred is continuing." On the whole, the outlook for Springs Mines is, as the chairman said, "very promising," and the mine is rapidly taking its place among the great Far East Rand producers. At the Brakpan meeting the chairman, Mr. Mr. F. R. Lynch, paid a well-merited tribute to the brave defenders of the property during the recent revolt, and reviewed the recent history of the mine. Further capital expenditure will be necessary during this year, and though the course to be adopted in meeting it has not yet been decided upon, the chairman favours continuing the policy of over mining this year in order to profit by any premium which may be obtained. As regards the ore reserves, the chairman said: "We contemplate pushing out development towards the attractive district bordering against the State Mines property, and also establishing connection between No. 3 and 4 shafts at the earliest possible date, in order to be in a position to undertake the extensive development of the lease area. From these remarks you will understand that the position is considerably relieved, and that before long we shall be able to follow up any favourable disclosures with a view to building up an ore reserve which is more in keeping with the capacity of the reduction plant." A very complete picture of the development results at the Springs West mine was presented by the chairman, Mr. F. R. Lynch, at the annual meeting, and shareholders will find in it several satisfactory features. Perhaps the best is the fact that the results of development work since the strike have been very favourable and the values obtained during the current month distinctly good. The property is going through the usual ups and downs of a developing Far East Rand proposition, but there is good reason to hope it will eventually make a good mine. At the Daggafontein meeting it was shown that the directors have by no means lost hope in the future of this property. Towards the end of last year, the directors, having come to the conclusion that the time was probably approaching when money would again be available for mining enterprise, wrote to the Government suggesting certain methods by which their endeavours to provide fresh capital to restart operations might be facilitated, such as the replotting of the mynpacht, the granting of an additional mining area, and relief from taxation. Although the directors' application has, owing to legal difficulties, not proved successful so far, they still hope for sympathetic consideration by the Government. They are anxious to lose no possible chance of restarting this property, which will not only prove the value of the Far East Rand, but will also provide work for a considerable number of men who are unemployed as a result of the recent strike. As the chairman put it: "This country requires capital for the development not only of mining, but of other industries as well, and I think the Government should assist us as much as possible by agreeing to our proposals, which are designed to facilitate the raising of fresh capital funds, especially as a very large sum of money has already been absorbed in the preliminary development of the property."

At the New Era and Rand Selection meetings the affairs of these "holding companies," which are mainly concerned with the mines of the group already mentioned, were reviewed in detail. At the Rand Selection meeting the Chairman, Mr. Lynch, declared that the recent upheaval, which resulted in heavy loss to the gold mining industry, must seriously affect this year's dividend prospects, but it is hoped that its ultimate effect will be good. "I trust also," he said, "that the unrest which has been experienced in mining circles for some considerable time, to the detriment of the industry, will now entirely disappear. If both sides act reasonably and sympathetically there is no reason why the trouble should ever recur, and we can then look forward to the future with every confidence." This is a hopeful note, and we can only trust that the Chairman's confidence will be amply justified.

City Deep.

Mr. F. R. Phillips, the chairman, put the present position of the City Deep very plainly at the annual meeting of the company last week. The record profits earned for 1921 have, of course, been eaten into by the strike losses during the first quarter of this year, but Mr. Phillips was able to point to the satisfactory April profits, "which will go far to wipe out the deficit of the preceding three months." Emphasis was laid on the fact that the working costs for the year 1921 compared with 1914 show an increase of 7s. 6d. per ton. The reasons for this increase, which has been general, have been given on many occasions. They include the high cost of stores, the increased remuneration to white and native employees, and heavy charges for the Phthisis Compensation Fund. "Every endeavour is being made to reduce costs," said Mr. Phillips, "and with the increased efficiency which freedom from trades union restrictions should bring, together with lower costs of material, a considerable improvement may be expected. The development position of this mine, however, is such that a vigorous policy must be pursued, and, in consequence, heavy expenditure in this direction must be expected." Later on in his speech, the chairman said: "The fact that an increased development programme is necessary is fully realised, and every endeavour is being made to improve the position. This is indicated by the increase in the monthly development footage, which averaged 2,596 feet for the last six months, as compared with an average of 1,959 feet for the first half of the year." It is too early yet to gauge the effect of the new conditions on the results from the mine, but everything points to the hopes of the management being fulfilled.

Notes & News.

West Rand Activities.

Large blocks of claims have been pegged out recently around Witpoortje and in the vicinity of the old Saxon and Gipsy properties, near the Princess Estate, Roodepoort, and a number of small syndicates are on the point of erecting 10 stamp and 5 stamp mills. Chief activity is centred in the Witpoortje-Champ d'Or-Luipaards Vlei Estate area, where the East Champ d'Or is running a 20-stamp battery and securing encouraging returns from the Main Reef Series. The Battery Reef, which is confidently expected to prolong the life of the Luipaards Vlei Estate and West Rand Consolidated, is being exploited by syndicates which are operating to the south of the Luipaards Vlei municipal location.

* * *

By-products Works Start.

An official announcement has been made by the Dundee Coal Co. of Natal to the effect that the by-product and coke plant, which has been in course of construction for the past two years, has been started successfully. This plant has been designed to manufacture coke, tar products, including tar acids, naphthalene, benzol, sulphates, etc. It is anticipated that the financial results will justify the expenditure. Important contracts have already been made for the sale of coke and tar in South Africa.

* * *

New States Development.

The report for the quarter ended the 31st March, 1922, on New State Areas, Limited, by the Government Inspector of Mining Leases, states that the strike of mine workers on the 10th January completely stopped all work on the property with the exception of pumping and baling operations which were carried on to the extent it was found possible. The water, however, made faster than it could be dealt with, and this interfered with an immediate commencement of development work when the strike was called off, more especially at the south shaft. The development work carried out during the quarter is as follows:—Drives, 611ft.; winzes and raises, 400 ft.; crosscuts, etc., 230 ft.; total, 1,241 ft. Of the above total, 777 feet and 464 feet were accomplished at the north and south shafts respectively. Footage on reef, 955 ft.; footage sampled, 790 ft.; footage payable, 320 = 40·5 per cent. Average reef channel width payable footage, 23 ins.; average reef channel value payable footage, 24·0 dwt. The development sampled at each of the shafts was—Total feet 790, percentage 100·0, payable feet 320, percentage payable 40·5, channel width payable 23 ins., channel value payable 24·0 dwts. Owing to the flooding of certain winzes, it was not possible to sample the whole of the footage on reef. The total footage developed for the previous quarter was 6,362 feet.

* * *

New Diamond Diggings.

It is understood on thoroughly reliable information that the Mines Department will proclaim Mosesberg an alluvial diamond diggings area on June 9 next, and that the official announcement will appear in the next issue of the *Government Gazette*. The Mosesberg area has already proved rich in diamonds, and it is believed that the lands now to be proclaimed will prove equally productive. The diggers on the alluvial diamond fields have long been agitating for it to be thrown open to them, and a considerable rush may be expected of old Cape and Transvaal diggers, together with some newcomers, who will be trying their luck for the first time. It was thought that the last rush in South Africa had been witnessed at Thlaping, which was characterised by some unseemly incidents. No law, however, has yet been passed introducing a ballot, and the pegging-out of claims on this new land will have to take place under the old system of rush. It will be remembered that the farm on which Mosesberg is situated has been the subject of litigation in the local High Court, then in the Appeal Court, and finally to the Privy Council. Since the legal position was resolved the diggers have been repeatedly urging that it should be proclaimed, and the present news has been received with much gratification. It is believed that the Government intend at the same time throwing open land for diamond prospecting in the Transvaal and Free State, with a view to preventing congestion of diggers at any one spot.

* * *

Stock Exchange Freedom.

Commenting upon the decision of the London Stock Exchange that it will revert to the old system of fortnightly settlements this month, "Barron's Financial Weekly," of New York, says that the move is more significant and encouraging than the layman might suppose. "Since the outbreak of the war there has been a sort of moratorium for a number of Stock Exchange speculative accounts, and the adjustment of this, running, as it does, into many millions sterling, has been no easy matter. With the outbreak of war in 1914 some Government regulation became inevitable, or at least advisable. Speculation was not forbidden, as so many people anxious to 'reform Wall Street' suppose. Trading is limited to cash transactions, which can, of course, be as speculative as the heart could wish. It is on such transactions that the New York Stock Exchange conducts its business. There are all sorts of arguments for and against fortnightly settlements as distinguished from the New York Stock Exchange, or even the weekly settlement of its humble neighbour, the Consolidated Stock Exchange. But the restoration of that system in London means a return to unfettered business, with proper safeguards provided, not by a meddling and unintelligent Government Bureau, but by the Stock Exchange Governing Committee, as they should be. The financial centre of the world is not on its way across the Atlantic yet. So long as London and the British Government believe in letting a man take his own risks and reap his own profits, there is not much likelihood of a change."

Where our Gold Goes.

AMERICA'S HUGE FORTUNE IN ORNAMENTS—SOME STARTLING FIGURES.

One of the [illegible] of the golden flood which has poured in upon the people of the United States since the beginning of the war is the addition of over $300,000,000 worth of gold manufactures to their already large stock of personal effects of this character, says an American contemporary.

The additions made to the already existing stocks of material manufactured from the precious metal have been, says the Trade Record of The National City Bank of New York, exceptionally large during and since the war. In pre-war years, says the Bank's statement, we were accustomed to utilize from 25 to 30 million dollars' worth a year of "new gold" in the "manufactures and arts." The term "new gold" represents the sum actually added to the existing stock of gold manufactures and is exclusive of the large quantities of old material turned in at the assay office and there transformed into condition in which the metal could be re-utilised for similar lines of work.

Most of the gold used by the manufacturers of the country is presumably purchased direct from the assay offices and the mints, and the reports of the Director of the Mint show that these purchases prior to the war averaged about $35,000,000 a year of "new material," and $8,000,000 a year of "old material." In 1916, when our imports of gold jumped to practically $500,000,000 and the earnings of the people were also greatly increased, the sales of "new gold" by the assay offices and mints jumped to $41,000,000 and of "old material" practically $10,000,000; in 1919 $56,000,000 of the "new material," and the "old material" $20,000,000, and in 1920 the "new gold" sold exceeded $60,000,000 in value, while the total for 1921 will approximate $40,000,000. The additions of "new gold" since the beginning of the war have aggregated over $300,000,000 and brought the grand total of governmental sales of "new gold" for industrial purposes since 1880 up to approximately a billion dollars. Most of this was transformed into manufactures for use of the people of the United States, as the value of the exports of gold manufactures is comparatively small, seldom reaching a million dollars a year.

In other parts of the world the normal consumption of gold for industrial purposes is also large. Studies of this subject made by the United States Mint Bureau in the years immediately preceding the war indicated that the world's industrial consumption of gold had aggregated about two billion dollars in the short period 1890-1910, of which about 20 per cent. was used in the United States. In the occidental world alone the total consumed for manufacturing purposes was about 1½ billion dollars in the twenty-year period and an estimate for the Orient, chiefly India, brings the total world consumption in the twenty-year period up to fully $2,000,000,000. While much of the gold entering India disappears and is reported as "buried," the Indian Government states officially that the uncoined gold imported into India may be considered as to be used for ornaments and manufactures, and the Statesman's Year-Book of 1921 in recording the heavy gold imports of India remarks that "gold is used chiefly in the form of ornaments."

These figures, which indicate a world consumption of fully $2,000,000,000 worth of gold for industrial purposes in the short period 1890-1910—an average of about $100,000,000 per annum—throw, adds the Bank's statement, an interesting sidelight upon that much discussed question of "what becomes of the gold." World statistics estimate the total output of gold in the world since the discovery of America at slightly more than $18,000,000,000, while the annual studies of the United States Mines Bureau regarding gold monetary stocks in all the countries of the world have never disclosed the existence of more than 8½ billion dollars as the grand total of gold monetary stock visible in all parts of the world for which records can be had. With a record of over $18,000,000,000 of gold produced and less than $9,000,000,000 known to exist in monetary form or as a basis for currency, it is quite apparent that the share of world gold utilised for other than monetary purposes is larger than usually supposed. The known quantities used for manufacturing in the twenty-year period, 1890-1910, were slightly more than $2,000,000,000 while the world production in that twenty-year period was slightly less than $6,000,000,000, suggesting that perhaps as much as one-third of the world's gold output is now being used for industrial purposes.

Probably three-fourths of the gold used in the United States for "manufactures and arts" is utilised for jewellery, watches, etc. Experts estimate that the quantity supplied to the dental trade averages about $4,000,000 a year, of which, however, a considerable percentage is returned by them in the form of gold obtained from "old work," while recently published estimates of the yellow metal used in the manufacture of gold leaf puts the average at about $1,000,000 a year. The mere remelting of old, unused, and sometimes forgotten jewellery during the war added more than $100,000,000 of gold to the world's stock available for monetary purposes.

ACCIDENT AT BROKEN HILL.

News has been received in Bulawayo of a fall of ground which took place at the Broken Hill mine last week. We regret to learn that it resulted in the death of Chief Mechanical Engineer West and the injury of another European, named Bell. Mr. West was a Johannesburg man. The fall of ground took place in the open cut on No. 1 Kopje. The accident has not hindered the mining operations, which are being carried on as usual, and it is reported that the water—which probably caused the fall—is being held satisfactorily in check.

HYDRO-ELECTRIC ACTIVITY.

In May, 1920, Sir W. G. Armstrong, Whitworth and Co., Ltd., initiated a Hydro-Electric Section as a part of their Civil Engineering Department, to secure orders for Water Turbines to be manufactured at their Elswick Works to the designs of a well-known Norwegian firm. The volume of business laid before the Hydro-Electric Section, since it was first established was such as to cause the board to decide to form a separate Hydro-Electric Department, as a unit apart from the Civil Engineering Department, as from January 1, 1922. The new department, like the old Hydro-Electric Section, is dealing with complete water power development schemes throughout all the various stages, no less than with the various component parts of such schemes, civil engineering, mechanical and electrical. Messrs. Armstrong now have survey parties out in many parts of the world looking into projects which have been brought before them for submission to the powerful financial group with whom they are working in the City of London, and it can only be anticipated that the part they will play in the coming era of intensive Hydro-Electric development in the Empire will be a very important one—and not only in the Empire but in all parts of the world. The offices of the Hydro-Electric Department are at 8, Great George Street, Westminster, S.W.1, and the department is under the management of Mr. Douglas Spencer, who is assisted by such well-known hydro-electric engineers as Mr. Robert P. Tod, Mr. V. Bataillard and a large staff of British engineers.

Rhodesian Mining: A Year's Progress.

GOLD. COAL. COPPER AND ASBESTOS RETURNS—POINTS FROM REPORT OF SECRETARY FOR MINES.

Mr. E. W. S. Montagu, the Secretary for Mines, in his report for the year 1921, states that during the first period of the year the prospects were satisfactory, as the gold premium remained at a high figure. The asbestos market was buoyant and chrome ore was in demand, but the position changed considerably. There was a fall in the gold premium, and the asbestos and chrome markets suffered a distinct setback; outputs from the latter were practically discontinued on account of large quantities of base minerals being available in London for sale and at Beira for shipment for which purchasers were not forthcoming. The principal chrome mine of the country shut down, and the asbestos mines practically ceased production and restricted development. In the asbestos industry large sums have been spent on the most up-to-date plant, and the erection of a valuable plant on a mine at Shabani was only just completed.

At the close of the year there were indications, however, of an improvement in the asbestos consumption, more especially in connection with certain fibres, and it is anticipated a greater demand for Rhodesian asbestos will occur in 1922. The mica industry, which was showing an improvement in output and preparation of the mineral, was also seriously affected by European conditions. Excellent mica has been shipped to London and the bulk is still awaiting purchasers.

Strike Consequences.

In the earlier months of the year a strike occurred on some of the big gold mines. The result of the strike was the creation of the Mine Owners' Association, which embraced the managements of all the bigger mines. It created a recognised body of the bigger propositions with whom the Mine Workers' Union could negotiate in regard to labour conditions on the mines. Interviews between the Association and the Union were held, and after considerable discussion an amicable working basis was arrived at for a definite period, and the strike was brought to a close. It is sincerely hoped that consultations in future between these two bodies will result in smooth working of the industry and thus prevent strikes, which do not appear to materially help skilled labour, but damage the country. It is estimated that the strike caused a diminution of some 15,000 to 20,000 ounces of gold in the output. Amongst the smaller workers who manage their own mines and practically employ only native labour, the fall of the premium was not so seriously felt, as native labour was plentiful, and in some districts cheaper, and the prices of mealie meal, meat and other native food were lower. There is every indication that greater activity prevails to-day in the search for gold reefs and the prospecting afresh of claims upon which work had previously ceased. The reports of the Mining Commissioners and the Inspectors of Mines all point to renewed interest in gold propositions. It is not conceivable that we have discovered all the mines which the country contains, and it is only by prospecting and development work that new propositions or expansions of present claims can be ascertained. Over-stocked markets in base minerals and the fall in prices of mining plants bring gold mining again more prominently forward, and with a good native labour supply and cheaper food we may anticipate more activity in the gold line of mining. In 1907 the Small Workers' activity in opening up gold reefs on an economical basis led to the discovery of some of our biggest mines, and it is hoped that renewed interest in gold mining will bring about the same result again.

Wankie Colliery.

The Wankie Colliery maintained its outputs of coal and coke, and was in a position to increase its output if called upon to do so. The colliery is well equipped, and a regular supply of native labour shows that its work is popular with the natives. A new incline shaft has been sunk to a depth of 700 feet about five miles distant from the present colliery, and this has been done for the purpose of opening up the western section of the coal deposit, which in time will link up with the main workings. A very large area of excellent coal is therefore available at Wankie.

The popularity of the Rhodesian mines with native labour was again in evidence, as the supply from the north was well maintained, and more labour than could be absorbed reached the country. The supply of local labour was also satisfactory, and the mining industry holds a good name as an employer of labour. The natives are well fed and housed, and the pay for good mine boys is satisfactory. The monthly average number of native employees was 37,605, which is much on the same basis as prevailed in 1920. The monthly average of Europeans employed was 1,388. The number of gold producers was 316, an increase of 21 in the year. Alluvial was practically neglected, as there were only two producers. This means of a livelihood is found to be too precarious and uncertain. It is hoped, however, that at an early date an alluvial section will be worked on a large scale, equipped with sufficient capital to ensure the more thorough testing of an alluvial deposit.

The Gold Production.

The total production of gold amounted to 585,525 ounces valued at £3,217,275, an increase of 33,027 ounces, and a value of £160,726 as against 1920. The value contains a portion of the premium realised on the 1920 output, but as a contra the whole of the premium for 1921 was not accounted for in that year. A very distinct drop in the value of premiums has occurred in 1922, and though the premium figures for the remainder of 1921 will be shown in the 1922 report, there must be a fall in the general values for that year. Nine mines produced over 10,000 ounces during the year, viz.: Shamva, 87,232 ounces; Globe and Phœnix, 68,085 ounces; Lonely, 56,479 ounces; Cam and Motor, 41,775 ounces; Falcon, 36,596 ounces; Rezende, 31,883 ounces; Arcturus, 30,014 ounces; Gaika, 15,287 ounces; Fred, 14,263 ounces. The Cam and Motor re-entered the producing list in 1921, and the Arcturus production was for a full year, in comparison with a six months' run in 1920. These nine bigger producers accounted for 65 per cent. of the total gold production. The following mines produced between 5,000 and 10,000 ounces in the year: Abercorn, 7,218 ounces; Jessie, 7,014 ounces; New Eclipse, 6,171 ounces; Connemara, 6,343 ounces; Moss, 5,181 ounces; Golden Valley, 6,996 ounces; Tsessebe, 6,175 ounces; Turkois, 5,530 ounces; Tip Top, 5,568 ounces; Joking, 5,076 ounces. The Moss, Tsessebe, Tip Top and Joking entered the list of producers of over 5,000 ounces for the first time.

Other Minerals.

In silver there was a decrease of roughly 6,000 ounces, with a very considerable fall in value. The 1920 value reached the figure of 7s. 3d. per ounce, but the approximate figure for 1921, inclusive of such premiums as were brought to account, was 2s. 7d. per ounce. The production for 1921 was 152,989 ounces, valued at £19,841, as compared with 158,982 ounces, valued at £58,178 in 1920. The principal producers of silver were: Falcon Mine, 67,569 ounces; Shamva, 22,057 ounces; and Rezende, 17,531 ounces.

The Falcon Mine accounted for the copper production. Owing to the fall in the price of copper, the smaller copper propositions had to close down. It was only owing to the fact that the Falcon ore contains a large percentage of gold and silver that the mine was able to continue its operations. Even with this help in value, the authorities experienced an anxious time with the price of copper continually on the low grade, and most careful working and economy had to be exercised. The output of copper was declared at [illegible] tons, valued at [illegible], as compared with [illegible] tons, valued at [illegible] in 1920. The value of copper fell from £107 per ton in 1920 to [illegible] per ton in 1921 and has since declined to an even lower figure; but it is hoped that with a reduction of expenses and the most rigid economy the operations of the mine will be continued, otherwise it would have to close down, which would be a great loss to the country, and in America the price of copper has fallen to £64 per ton.

Chrome, Asbestos, etc.

The chrome output for 1921 was 50,188 tons, valued at £195,360, a decrease of 10,000 tons and a value of £50,000 as compared with 1920. The principal producers were the Rhodesia Metals Syndicate and Rhodesia Chrome Mines, Ltd., Selukwe, and the declared value of the chrome averages at £3 17s. 9d. per ton, as against the sum of £4 1s. 4d. previously. A small tonnage was shipped from the Lomagundi district.

In asbestos the output for 1921 shows an increase of 706 tons and a value of £336,127 as compared with 1920, largely accounted for by adjustments. The 1921 declared production was 19,529 tons, valued at £795,699, as against 18,823 tons, valued at £459,572 in 1920. The principal producers in the Shabani and Victoria districts were: Shabani Mine, 6,295 tons; Nil Desperandum, 3,149 tons; Gath's Asbestos, 2,897 tons; Birthday, 2,167 tons; and King's 2,854 tons.

On the mica fields, in the Lomagundi district, mica of good value has been opened up. The declared output was 85 tons, valued at £20,747, as against 97 tons, valued at £25,153, in 1920.

Five tons of stream tin were declared, at a value of £514, but so far no lode or deposit of tin has been discovered. In tungstic ores there was an output of 17 tons, fine contents, valued at £800, but owing to the fall in price not much attention has been given to the working of such ores. The production of arsenic was continued from one mine in the Umtali district and one in the Bulawayo district. The Umtali product is converted into dip, which finds a ready sale locally. The Bulawayo output is forwarded to the Union for conversion into dip. The output amounted to 361 tons, valued at £11,263, which shows a small decrease in comparison with last year.

The railways, Congo, Rhodesian mines and smaller industries keep the Wankie Colliery busy, and railway truckage has been sufficient. As the wood fuel diminishes the use of coal in the towns must increase, and the demand for coal at Beira should also increase for shipping requirements. The output for 1921 was: Coal raised, 574,753 tons; coal sold, 309,286 tons; coal used for coke, 176,315 tons; coal used for brick kilns, 2,647 tons; and the value declared was £256,815, as against £252,220 in 1920.

A Summary.

The mineral production and values for the year, including adjustments, are summarised, and show a total value of £4,720,375, an increase in value over 1920 of £269,387. The quartz crushed was declared at 1,898,120 tons, sands treated 962,921 tons, and slimes 438,489 tons. The increase in tons crushed shows that plants erected are able to deal with a larger tonnage and some new mills have been brought into work. The gross gold won, inclusive of all treatments, works out at approximately 6·17 dwt. per ton milled as compared with 6·35 dwt. in 1920, and this may be accounted for by larger tonnages on some low grade propositions rather than a fall in the general value of goldbearing ore in the country. The gold claims current on 31st December, 1921, were 33,104, a decrease of 3,182, caused by more careful examination of old blocks, and the reduction of holdings which showed no mineral value. The total of current base mineral claims was 215,647, against 45,346 at the end of 1920.

We beg to announce our
association with the
Ingersoll-Rand Company
in the operation of a

NATAL BRANCH OFFICE
SITUATED AT
338, SMITH STREET,
DURBAN.

ROBINS CONVEYORS
(S.A.), LTD.

Conveying & Hoisting Machinery,
Material - Handling Appliances
:: :: and Installations. :: ::

P.O. BOX 4736————TELEPHONE 4182
JOHANNESBURG.
P.O. BOX 811————TELEPHONE 3383
DURBAN.

Approved by Mines Dept., Home Office and Board of Trade

THE "PROTO"
SELF-CONTAINED
OXYGEN BREATHING
APPARATUS
for Rescue and Recovery work in Mines after Explosions, etc.
ADOPTED BY ALL THE PRINCIPAL RESCUE STATIONS IN THE UNITED KINGDOM, AND BY MANY COLONIAL AND FOREIGN GOVERNMENTS

SMOKE HELMETS
of various patterns.
For Gob Fires and other Short distance work in Collieries.
Simple. Light. Portable.
THE "NOVITA" OXYGEN RESUSCITATION APPARATUS FOR THE APPARENTLY ASPHYXIATED.

RESPIRATORS FOR ALL PURPOSES. OXYGEN COMPRESSION PUMPS. GAS ANALYSIS APPARATUS. ELECTRIC LAMPS, Etc.
SIEBE, GORMAN & CO., LTD. "NEPTUNE" WORKS and
187, WESTMINSTER BRIDGE ROAD, LONDON, S.E.1, ENGLAND.
Cables: "Siebe, London." Codes: A.1, A B.C 5th, Western Union, Bentley, Lieber, Marconi, Engineering and Private.

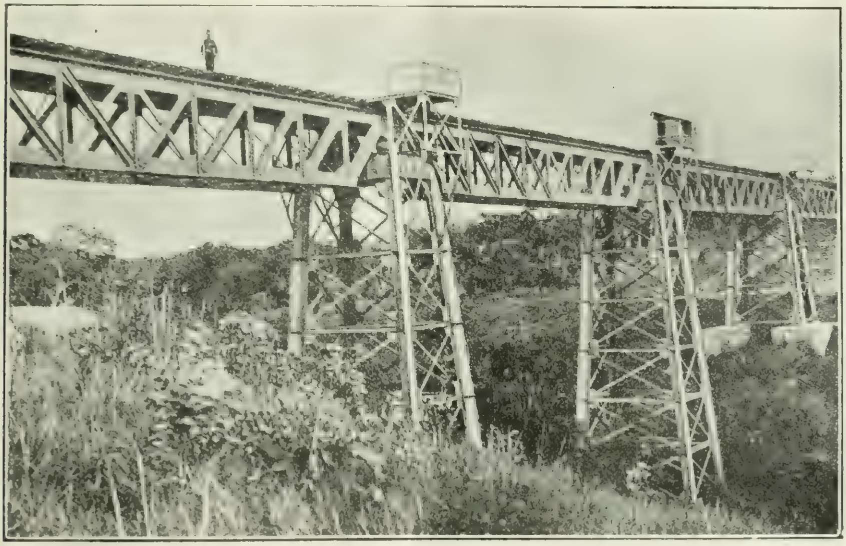
BELGIAN CONGO.

Congo Developments.

THE NEW RAILWAY TO THE ATLANTIC — HOW WILL IT AFFECT THE LOBITO ROUTE?—IMMENSE METALLURGICAL PLANT TO BE ERECTED—LA PANDA AND ITS PROMISE—A COUNTRY WITHOUT "COLOUR BARS" OR "STATUS QUOS"—RECENT COPPER OUTPUTS—SOME INTERESTING FIGURES.

Elsewhere in this issue will be found a map specially drawn for this Journal, which depicts the route of the new Kasai Railways and shows La Panda, destined to become a place of vast importance.

The Belgian Congo is a very long way from Johannesburg in the eyes of Randites, so far away indeed from South Africa that in the estimate of most people in the Union its development, its achievements and its problems can scarcely have any influence upon the Southern State. But it is certain that events in the far North in the heart of the Continent will have their reaction upon the whole of Africa and therefore upon the Union, as they already have affected the fortunes and misfortunes of Rhodesia, which may or may not in the near future be incorporated in the Union. The Rhodesian Railways, the Wankie Colliery, Northern Rhodesian farmers, merchants not only in Bulawayo and Salisbury, but also in Johannesburg and the coast ports and also the port of Beira have for long felt the beneficent interest of Katanga trade.



A Bridge on the Katanga Railways.

The Two Routes to the Atlantic.

But it has for many years been recognised that construction of the Benguella Railway, which would strike due westwards from the magnificent harbour of Lobito Bay into the heart of the great copper belt of the Congo Belge would divert trade from the Southern route over the Beira and Mashonaland Railways and their northern extensions out to the Atlantic. Recently Mr Robert Williams has been endeavouring to interest the British and South African Governments with a view to securing completion of the Benguella line, but it hardly seems that the Lobito Bay project has been considered in its proper perspective in relation to the new railway building project of the Belgians, which has been referred to in recent issues of the "S.A. Mining and Engineering Journal," and which is known as the Kasai Railway. This line will be constructed from Bukama, the present railhead of the Cape-Cairo route on the navigable waters of the Congo north-westwards to a place called Ilebo, 30 kilometres south of the confluence of the Kasai and the Sankuru. At Ilebo a deep water river port has been located. Traffic will be carried along this railway and the Kasai River to Kinshasha, where there is a railway, on to Matadi, and from there a river route to the mouth of the Congo is available.

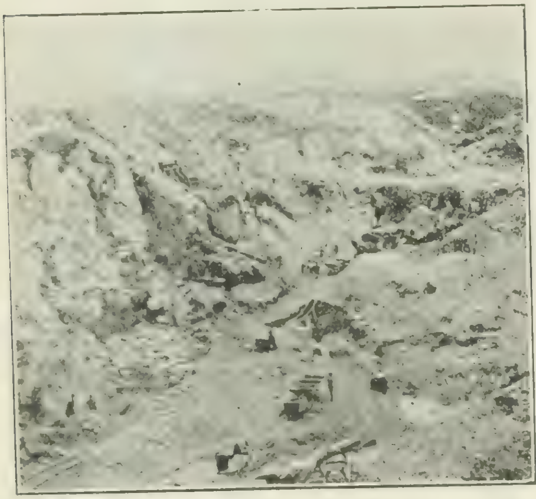
A Six Years' Undertaking.

Construction of this new railway from each end will be commenced next year, and it is anticipated that the line will be completed in the early part of 1929. Simultaneously the Union Miniere will proceed with the construction of its immense copper treatment plant at La Panda at no great distance from the Kambove copper mine. This plant will [illegible] and completion of the [illegible] the equipment will [illegible] be effected about [illegible]

A Big Town of the Future: La Panda.

The [illegible] Government and the Union Miniere are associated [illegible] which will be intensified when the railway [illegible] at La Panda [illegible] La Panda, in which evidently [illegible] thousand in the [illegible] from the Central African bush, in the course of time may well become one of the most important and industrially active towns in Africa. The Belgians will work out the economic destinies of their vast and rich tropical dependency without observance of any colour bars, status quo agreements or any other artificial barriers against progress, such as obtain in the Transvaal. The full import of the ambitious programme which is to be engaged upon by our far northern neighbours is not realised locally, but it is safe to say that in the course of the next few years the development of the Congo will astonish the world. The forthcoming special Year Book Edition of the "S.A. Mining and Engineering Journal" will contain an interesting series of articles, illustrated by photographs, maps and diagrams concerning the great copper Rand of the interior, the Congo rail and river routes and other aspects of industrial development in the great Belgian colony. Our special commissioner, who has been entrusted with the compilation of this special series of articles, left for Rhodesia and the Belgian Congo on Thursday.

Palace of Justice, Elisabethville.



Open Workings on the Great Katanga Copper Belt.

Union Miniere's Latest Returns.

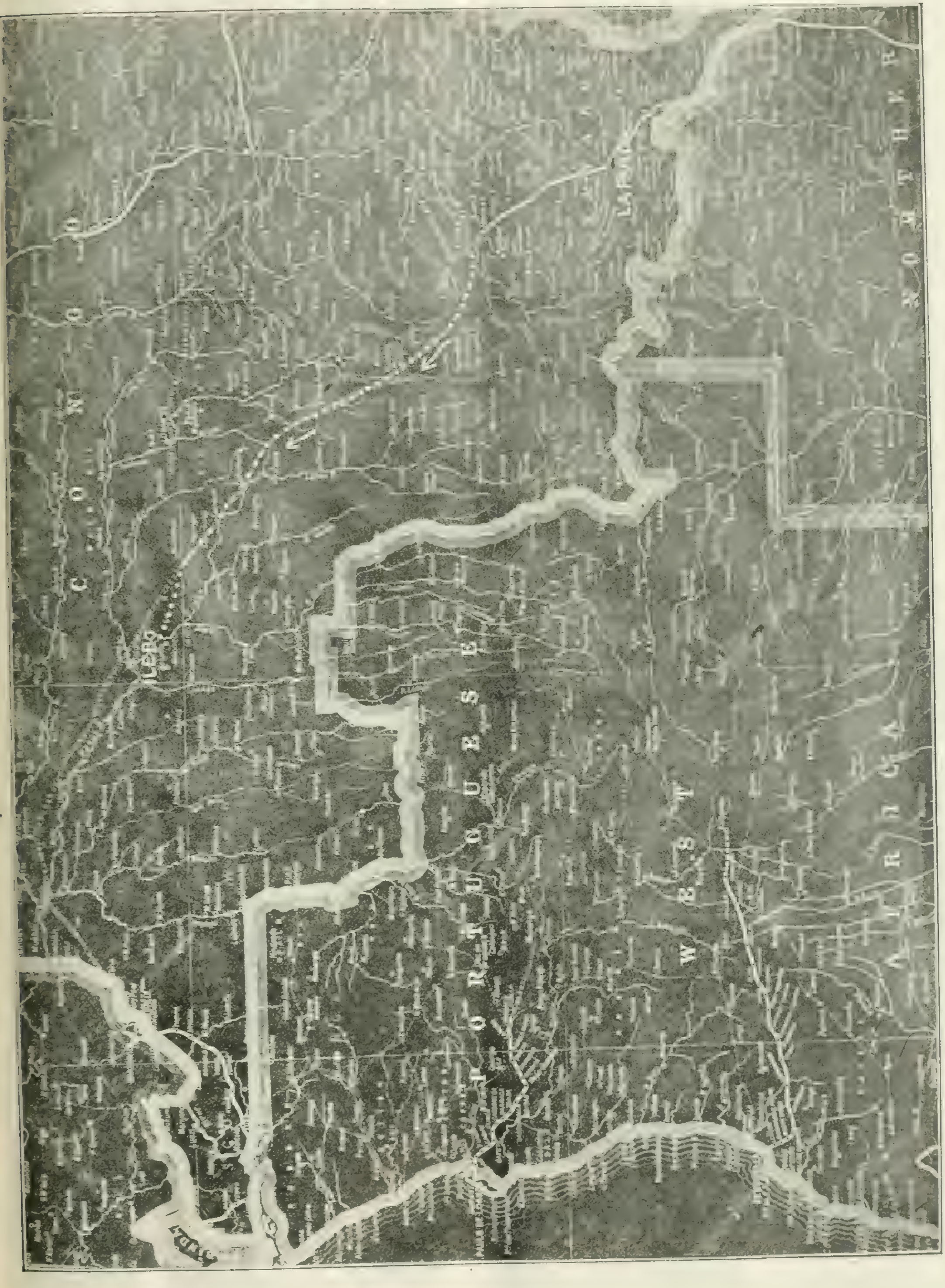
Meanwhile it is interesting to note the latest returns from the Congo copper fields. Notwithstanding the adverse [illegible] conditions the output of the Union Miniere Company has made steady progress during the present year. In 1920 the production amounted to 18,962 metric tons, equivalent to 20,929 short tons. In 1921 there was a very appreciable increase [illegible] year showing an output of 30,400 metric tons, or equivalent to 33,620 short tons. The output for the first quarter of the current year amounted to 8,773 metric tons, or 9,680 short tons, whilst the month of April showed a still further improvement with a return of 3,303 metric tons, equivalent to 3,650 short tons. These figures [illegible] improvement [illegible] is no doubt that with any [illegible] in the [illegible] metal conditions generally in the Katanga will benefit. Figures regarding the employees of the Union Miniere at April 1, that is, after the severe retrenchment measures were taken, are as under.

	Whites.	Natives.
At Lubumbashi	320	2,325
At Panda	325	2,881
Other properties	230	1,863
	875	7,069

The Katanga Tin Mines.

The development of the Northern Katanga transport routes will bring Elisabethville into closer contact with the operations of the Geomines Tin Company. "Geomines" is the generally used abbreviation of the Belgian Company with a very formidable title that exploits the tin deposits in the Tanganyika-Moero district, and also has interests in the Sankishia and Makala coalfields. The principal operations of the company are confined to the working of the tin deposits that are found at Manono, some 900 kilometres from Elisabethville. Manono itself is situated about 55 kilometres from Lualaba River, by which route the product of the tin fields is evacuated. The company was greatly handicapped by the difficulty in obtaining satisfactory machinery during the War period, and the antiquated methods of transport that characterised the Northern route. The actual deposit at Manono and Kitotolo is in the centre of an extensively prospected tin zone, and now that the company has received modern machinery and additional transport facilities it is probable that development will take place on a very large scale. The question of the construction of a light railway from Manono to Muyumba, the company's port on the Lualaba River, has been discussed, and there is no doubt that this will enable the company to produce continuous export, whereas at the moment there is little or no export during the rainy season. The 55 kilometres between Manono and Muyumba is covered by motor and native transport, but there are several "dambos" (swamps) en route, and once the rains start the motors are held up and the natives return to their villages and prepare their gardens. The construction of a light railway will do away with these drawbacks, and, with the opening up of the Busanga tin fields by the Union Miniere Company, the Katanga may soon become a factor in the tin as well as the copper markets.

CONGO DEVELOPMENTS.



This map shows the new Belgian Congo Railway project, Bukama to Ilebo. The map also exhibits La Panda.
An article on these undertakings appears in this issue.

WAKEFIELD'S
HIGH-CLASS LUBRICANTS.

The Economy of Paying a Higher Price.

Were we to assert that we could get a good satisfactory engineering job at a low price or that a cheap machine is as good and will do equally good work and be as economical as a first class one,
What would you say or think?

Why not be your own Judge?

Put WAKEFIELD'S LUBRICATING OIL to the test. If a gallon goes further, gives better working results and reduces danger of breakdown, your very pride in your work will decide the matter apart from all selling talk.

TRUE CHEAPNESS IS DECIDED BY THE AMOUNT AND QUALITY OF THE WORK DONE.

Sole Agent for South Africa: **WILLIAM CAMPBELL** P.O. Box 1814, JOHANNESBURG

Sales Representatives:
MARTYN & BELL,

2, Allkin House,
corner Marshall and Harrison Sts.,
Box 3181 JOHANNESBURG. 'Phone 1913

343 West Street,
DURBAN.
'Phone 1368 P.O. Box 206

STANDARD BANK
OF SOUTH AFRICA, LIMITED.
(With which is incorporated the African Banking Corporation, Ltd.)

Established 1862.

Authorised Capital - - -	£10,000,000
Subscribed Capital - - - -	£8,916,660
Paid-up Capital - - - - -	£2,229,165
Reserve Fund - - - - -	£2,893,335

GENERAL BANKING BUSINESS transacted at all Branches and Agencies; DEPOSIT and CURRENT ACCOUNTS opened; PURCHASE and SALE of INVESTMENT SECURITIES effected, etc.

SAVINGS BANK ACCOUNTS opened on terms, particulars of which may be obtained on application.

The BANK is in close touch with TRADE and INDUSTRIAL CONDITIONS, both local and overseas, and special attention is given to COMMERCIAL ENQUIRIES from customers.

EXECUTOR and TRUSTEE business undertaken.

Over 380 Branches and Agencies in Africa.

Agents and Correspondents throughout the World.

USE
"PORPOISE"
BRAND
ANTIFRICTION GREASE

Used for years by the majority of Mines all over South Africa.

Manufactured by
South African Lubricants & Chemical Works, Ltd.,
DURBAN & JOHANNESBURG.
Phone 1618, *Johannesburg Branch Office.*

The Week in the Sharemarket.

A DIAMOND REVIVAL?—CONTANGO SETTLEMENTS RESTART—GOOD MAY OUTPUT EXPECTED.

The holidays caused some profit-taking and consequently an easing of prices, but on receipt of better cables from London, dated Wednesday night, a hardening has been noticeable with very little stock offering. To-day (Thursday) there has been some demand for Consolidated Diamonds on higher quotations from London for De Beers at £12 7s. 6d., Jagers 52s. 6d., and Premier Defs. at 92s. 6d. This would indicate that the long expected diamond market is coming in for more activity in the near future. A rise in the leaders of this section is certain to have a beneficial effect on our local concerns, such as Consolidated Diamonds, Elands, West Ends, Therons and Crowns.

We are informed that very satisfactory returns may be looked for in the May output figures, and this should stimulate confidence in London market circles.

The first cantango settlement takes place in London today (1st June). The short account should have put the settlement machinery in good order, and business should drift back to pre-war conditions at an early date.

The Alkali Bill has passed its second reading, and has now been referred to a Select Committee. As far as one can gather no difficulty is anticipated, but the action of referring to a committee may cause some slight delay.

Regarding June dividends, although there is no information obtainable at the moment, we trust the Houses will not make the grave mistake of passing or seriously cutting down their declarations except in cases of absolute necessity. The financial position of the leading gold shares was little affected by the strike, save from the point of view of loss of profit, and there seems no reason why satisfactory dividends in this section should not be forthcoming. If they are not it will certainly have a detrimental effect upon the influx of capital to this country from overseas.

	Fri. 26th.	Sat. 27th.	Mon. 29th.	Tues. 30th.	Thur. 1st.
Anglo American Corp.	22 10½	21 9	21 6*	20 8	21 0
Apex Mines	6 6	6 9*	6 9	7 3*	6 9*
Aurora Wests	4 9†	4 3		4 3*	4 3*
Bantjes Consolidateds	6 3*	6 0*	6 6†	6 0*	6 1*
Brakpan Mines	50 0†	50 0†	51 0†		
Bushveld Tins	0 4*	0 1	0 4*	0 7*	0 4*
Cinderella Consolidateds	2 5*	2 6		2 5	2 4*
City and Suburbans	2 2*	2 3	2 3*	2 0*	2 3
City Deeps	15 0	14 3*	14 0	14 0	14 0*
Con. Diamonds	14 9*	15 4½	15 4	15 1	15 7½
Con. Investments	26 0*			26 0*	26 0*
Con. Main Reefs	11 0*	11 3†	11 6†	10 6*	11 0
Con. Mines Selection	13 0	13 0*	12 6	13 0*	13 0*
Coronation Collieries	33 0	32 6*		40 0†	33 9*
Coronation Freeholds	0 7*	—	0 6	0 10*	0 9*
Coronation Syndicates	4 10	4 9	4 7	4 6*	4 7*
Crown Diamonds	6 4*	6 4*	6 9	6 6	6 3
Crown Mines	—	38 6*	38 9*	39 0*	39 0†
Crown Mines Deb.	£100†	£100†	£100†	—	£100
Daggafontein Mines	2 11*	2 10*	2 11*	3 3*	3 1
East Rand Coals	1 6*	1 6*	1 6*	1 6*	1 6*
East Rand Deeps	0 9*	0 9*	0 6*	0 9*	0 9*
East Rand Minings	10 6*		11 6†		10 6*
East Rand Proprietary	7 1½	7 3†	6 9	6 3*	6 6*
East Rand Debentures	£85*	£85*			
Eastern Golds			0 7*	0 7	0 7
Ferreira Deeps	7 6*	7 6*			
Frank Smith Diamonds	3 9	3 9	3 0*	3 10	3 9*
Geduld Proprietary	59 0	58 9	58 3	58 [illegible]	59 6
Geldenhuis Deeps	5 0*	5 0*			
Glynn's Lydenburgs	15 6*	15 0*	15 6†	14 0*	14 7*
Government Areas	87 0	87 6	87 0	87 [illegible]	87 6*
Home Pipes				14 0	14 0*
Knight Centrals	4 1*	4 0*		3 10	3 11*
Lace Proprietary	7 9	7 9*	7 9*	7 1*	7 6*
Leeuwpoort Tins		6 6*	6 5	[illegible]	6 0*
Luipaardsvlei Estates	2 6*	3 0*	3 0*	3 0*	3 0*
Lydenburg Farms	5 3*	5 0	5 1*	5 1	5 1*
Meyer and Charltons	—	70 6*	—	70 0*	70 6*
Modder B.'s	32 3	31 9*	31 6	30 9	31 0*
Modder Deeps	43 9	43 3	43 9	43 6*	43 0
Modder Easts	8 9	8 7	8 6*	7 9*	7 11*
Natal Navigation Collieries	31 0	31 6	31 6*	31 6*	31 6*
National Banks	200 0*	207 6	210 0	210 0	210 0
New Era Consolidateds	6 1*	6 4	6 5†	6 4†	6 0*
New Geluld Deeps	1 6*	1 6*	1 6*		1 6*
New Kleinfontein	6 6	6 6	6 6*	6 3	6 3
New Modderfonteins	75 9	76 3	75 9	75 0*	75 6
New Unifieds		4 6†		4 6†	4 6†
New State Areas	32 6*	32 9	32 6	32 6*	32 6*
Nigels	0*		5 0*	5 0*	5 0*
Nourse Mines	14 6	14 3	14 3	14 0	13 10
Pretoria Cements	14 6	14 1	14 6*	14 0*	13 6
Rand Collieries	1 3				1 1*
Rand Mines			50 0*	50 0*	
Rand Nucleus	1 0*	1 0*	1 1*	1 1*	1 1
Rand Selection Corporation	[illegible] 0*		—	52 0*	
Randfontein Estates	18 0	17 1½	17 6		17 6
Rouxville Diamonds	1 0*	1 0*	1 0*	1 3	1 1*
Roberts Victors	8 0*	7 10*	7 10*	8 0*	7 10*
Rooibergs	3 4*	3 3*	3 3*	3 3	3 1*
Ryan Nigels	3 1*	3 0			
Simmer and Jacks	3 3	3 1*	3 1*	3 3	3 3
Springs Mines	46 0	45 6	45 9	45 6*	45 2
Sub-Nigels	12 3	12 3	12 1½	12 1*	12 0
South African Alkali	15 3*	15 3	16 0†	13 0	15 0*
South African Townships	8 9	9 0	9 0*	9 3*	9 0*
Transvaal G.M. Estates	10 9	11 9	12 0*	12 3	12 7½
Transvaal Silvers	16 6†		15 0†	14 3*	12 0*
Tudors				0 8†	0 8†
Van Dyks	1 0	1 0	1 0	1 0	0 10*
Van Ryn Deeps	68 0	68 0	67 0*	67 9*	68 0
Village Deeps	11 3*	11 6†		11 0	11 0
West Springs	10 9	10 9	10 10½	10 10	10 9
West Rand Consolidateds	4 9	—	4 0*	4 0*	4 7
Western Rand Estates	4 0*	4 0	4 0*	4 3*	4 0*
Witbank Collieries	39 3*	39 3*	39 0*		39 3*
Witwatersrands	—	12 9*	13 0*	13 0*	13 0*
Zaaiplaats Tins	2 4*	2 3*	2 4½	2 4*	2 1*
Union 5 per cent	£101¼*	£101½*	£102*	£101¼*	£101*

* Buyers. † Sellers. a. Odd lots. b. Ex London.

'LOWMOOR'
IRON and RIVETS
THE PRODUCTS OF
ROBERT HEATH & LOW MOOR, LTD.

SPECIALITIES :
COLD BLAST PIG IRON,
PUMPS,
WINDING ENGINES,
PIT TUBS,
COLLIERY PLANT & BUILDINGS,
CHILLED & GRAIN ROLLS.

Sole Agents in South Africa for Products of
LOW MOOR WORKS:
SAMUEL OSBORN
(S.A.), Ltd.,
Box 3162. Phone 4673.
JOHANNESBURG.

Railway Electrification and Industrial Development.

IMPORTANT STATEMENT BY ENGINEERS SUBMITTED TO RAILWAY ADMINISTRATION.

The following important memorandum was presented to the Minister of Railways jointly by the South African Institute of Electrical Engineers and the South African Institution of Engineers.

The councils of the above institutions understand that the question of railway electrification is now receiving final consideration and, in the hope that they may be of assistance to the Government, beg to submit the following observations bearing on the subject. In the opinion of the councils the two factors by means of which the Government can most readily and effectively promote the industrial development of the country are the provision of economical and rapid transport on the one hand, and cheap and abundant supply of electric power on the other. These two factors are essentially co-related, as it is only by means of electrification of the railways that a cheap supply of electric power can be made economically available over a large portion of the Union of South Africa.

Firstly, considering the transport problem, the future prosperity of the Union is essentially dependent upon the profitable export of our primary products, the chief of which are associated with the grain, meat and coal trades. The most adverse factor which militates against the rapid expansion of these industries is the very large distances over which such products have to be transported before reaching our ports, and the correct solution of the transport problem is the most important step which must be taken to bridge the gap between the present state of depression and the ultimate prosperity of the country. This problem is now crystallised in the subject matter of the reports prepared by Messrs. Merz and McLellan, and it is admitted that the most economical method of increasing the capacity of the railway routes, increasing the over-all speed, and cheapening the cost of transport is by electrification. Any alternative methods of dealing with the problem other than by electrification which might relieve the existing congestion on the Natal section, will not reduce working costs, nor appreciably affect the present unsatisfactory over-all speed. The doubling of the line is only economical when the two lines are immediately adjacent. When the doubling takes the form of two lines which are no longer adjacent, as must inevitably be the case on the Natal section, and which are separated by a matter of miles from each other, additional traffic can only be dealt with by increased costs owing to the duplication of staffs, stations, cross-over points, and all the necessary appurtenances of a single track in duplicate; in other words, there cannot be a reduction of working costs. Any policy which does not look to the ultimate development and prosperity of the country must be regarded as a short-sighted policy and not in keeping with the best interests of the country. In our opinion, electrification is the only means whereby a definite and actual economy in working costs can be obtained, inasmuch as it affords the greatest possibility of running heavy trains at a maximum of speed with a minimum cost of coal, repairs, maintenance and running wages. Messrs. Merz and McLellan have, in fact, estimated a return on nett capital outlay of no less than 40 per cent. on the Natal section, based on traffic density which has already been considerably exceeded since their report was presented. No country having potentialities such as those possessed by South Africa can afford to withhold on grounds of temporary expediency, an expenditure which will return such an excellent profit as undoubtedly will be the case on the Natal section.

Interests of Economy.

There can be no doubt whatever that in the interests of economy the electrification of the South African Railways must inevitably be undertaken soon or later. As engineers, we are cognisant of the gravely unsatisfactory state of affairs with regard to the repairs and maintenance of rolling stock arising out of conditions associated with the late war. This state of affairs is of such a nature that it is obvious to us that years must elapse before the existing steam locomotive rolling stock can be brought up to the pre-war standard of efficiency. To attain such pre-war standard will necessitate immediate heavy expenditure on additional land for workshops, the erection of the necessary buildings and the provision of equipment for same, all of which requirements present grave difficulties under existing conditions. The number of hours of effective service which electric locomotives can give is so much greater than that given by steam locomotives that the provision of electric locomotives would immediately and vastly improve the present position of affairs and would release a quantity of the existing rolling stock for use on other portions of the railway system.

Secondly, with regard to electric power supply, great advantages have accrued to the mining and other industrial undertakings of the Witwatersrand as the result of the bulk supply of electricity provided by the Victoria Falls and Rand Mines Power Companies, inasmuch as the concentration into one highly efficient organisation has not only greatly cheapened the cost of power *per se*, but also has rendered available for use in specific industries large amounts of capital which would otherwise have been less efficiently applied to the provision of a number of smaller and non-co-ordinated power supply stations. The electrification of railways would provide similar benefits in the way of cheap power supply which could be taken from the railway transmission lines running through miles of territory, and enormous areas would thus become ripe for industrial development, which fact undoubtedly would attract the attention of capital in every part of the world.

Durban and Capetown Power.

In order to emphasise the close relationship between main line electrification and commercial and industrial expansion, the present-day position of Durban and Capetown may be cited or referred to. In both instances there is a continual and pressing demand for more power. The case of Durban is perhaps the more pronounced and urgent, as specifically mentioned in Messrs. Merz and McLellan's report, owing to the immediate prospective requirement as regards power for grain elevators and new graving dock and oil storage plant, and the economic inadvisability of extending the existing power station to meet such demands. The concentration of electric supply for meeting all the power requirements within an extensive area is the only means by which the cost of production can be reduced to the minimum. It, follows, therefore, that substantial benefits will accrue not only to the industrial community of any centre when the new generating stations for railway supply are established, but also the industrial development of important districts will be seriously impeded if the erection of such stations is deferred. The points dealt with have been chosen because of the paramount necessity of adopting a reasoned and far-sighted policy in a matter of the greatest possible national concern. We feel that a mistaken judgment in this matter would set back the clock of progress to a far greater extent than is generally recognised, and we would, therefore, urge with all earnestness that the scheme for the electrification of the South African Railways be taken in hand with the least possible delay.

FITTER AND TURNER,
age 26, desires post, any suitable capacity, good qualifications.
DAVIES, The Avenue, Comberbach,
Northwich, Ches., England.

TRADE AND INDUSTRIES SECTION.

Week in the Mining Material and Engineering Trades.

BUSINESS QUIET—IRON AND STEEL—TIMBER AND BUILDING MATERIALS — ELECTRICAL GOODS — RAILWAY EARNINGS—FINANCIAL—AMERICAN NOTES.

General.

One of the foremost merchants in a conversation said he could not withdraw his previous opinion of six months ago that it would take the community all 1922 to recover the leeway caused by the strike. He thought, however, that we had undoubtedly got down to bed-rock, and that in spite of the inevitable climb and the keen competition caused thereby we were moving. Another very influential merchant said there was a better feeling prevailing with higher hopes of improvement. Naturally, until the mines got into full swing, about August or September, there could be no return to normal. The great thing, however, he said, and it is emphasised all round, is that until money gets more into circulation no great advance in business conditions can be expected. In the country, he said, there was, practically speaking, no money, and until cash got more generally into circulation—within, say, three or four months—no big improvement in general conditions was to be expected. The annual reports of gold mining companies which are reported this week show, even to the man in the street, the frightful results of the red ruin revolution on the gold mining industry during the past six months, and lead him and others to think, with Postumoho, "Why all this at once?"

Prices are practically unaltered, but in view of shortages already reported and still existing, some lines are bound to go higher shortly.

The Special Annual Supplement of *The Star*—Finance, Commerce and Mining—of the 23rd May, has found especial favour in commercial circles, which know how to appreciate a thing thoroughly well done. Like Oliver Twist, they ask for more!

Dunswart.

Owing to the rebellion, this company has been unable to start up fully, but the repairs are now being completed and the company has started up last week, and now Transvaal people will be able to quote for steel. Next month the company expects to supply all inquirers. The courteous manager of Dunswart, Mr. Neame, said General Smuts was with the Government now busy on the matter of bounty in respect of iron and steel in the Union, but how that bounty and its distribution would be exercised he did not know. He hoped next week to be able to report more fully.

British Enterprise.

The well-known Cleveland Bridge and Engineering Co., Ltd., of Darlington, England, has recently secured from the Siamese Government a contract for 18 bridges, which was obtained in face of tenders submitted from some seven different countries, some of which were lower but proved ineffectual in view of previous good work done by the firm in Siam. The same firm is likely to be successful in respect of their tender for the supply of about 14,000 tons of steel piping in connection with the waterworks extension of the Calcutta Corporation. The tenders sent in by Britain, India and the United States ranged from £300,000 to £480,000, the lowest one being from the Cleveland Bridge and Engineering Co. The tenders for steel piping form only part of the actual amount of work which will ultimately be contracted for, and will cost about £1,750,000. It is gratifying to note that a British firm was able to quote the lowest figure, and is of great importance as proving that British steel manufacturers have again resumed a competitive position in the world's markets.

Latest London cables report that prices of pig-iron and steel remain firm, billets being quoted £7 10s. minimum and No. 3 G.M.B. at 90s. per ton. Foreign offers show a marked falling off at prices on a par with British.

Engineering Dispute in Britain.

A large majority of the locomotive engineers and firemen have endorsed the proposal to link up with the Transport Workers' Federation.

The Amalgamated Engineering Union has decided to call a national conference of delegates at York yesterday owing to the financial strain upon the union in consequence of the protractedness of the lock-out.

Second-hand Machinery.

There is still a lot of excitement in regard to small propositions in the way of dumps and the southern reefs which have been discarded in the past, and inquiries are being made daily in regard to machinery to work the same. A good deal of machinery has been sold to these syndicates, and more will be required very shortly, as there are numerous other propositions that have only been pegged off lately showing the reefs on the surface in the western district that will be worked. All this means, of course, second-hand machinery, and the best up to now has been purchased, so there is very little in town of second-hand. Those thinking of new propositions had better purchase at once, as there will be a scarcity and new machinery will have to be purchased for these concerns at an enormously higher cost. There are still inquiries for small engines and boilers and tube mills, which are the coming means of recovery and of replacing batteries. There are good inquiries for all kinds of second-hand machinery spares, and a good June month is anticipated by second-hand dealers.

Latest Quotations.—Dunswart iron, 18s. per 100 lb. basis price; Union Steel Corporation, Ltd., 25s. basis; imported iron and steel, flats, rounds and squares, from 28s. 6d. to 35s.; channels and joists, 30s. to 32s. 6d.; imported angles, 32s.; smaller sizes, 33s. 6d.; tee iron, 32s.; shafting, ½ in. down to 3-16 in., 7½d. to 9d. lb.; ⅝ to 1½ in., 6½d.; 1¾ in. to 6 in., 5½d.; steel plates, 1-16, ⅛, 3-16, 23s. 6d.; 10 x 5 and larger, 25s.; spring steel, 7½d. to 8½d. lb.; bolts and nuts, hexagon, round, ⅜, 8½d. to 9¼d. lb.; ½ in., ⅝ and ¾, 40s. to 45s. per 100 lb.; hexagon nuts, ⅜, 8½d.; ½ in., ⅝ and ¾, 7½d.; fish plates, bolts and nuts, ⅜ in., 8d. lb.; ½ in., 6d.; ⅝ in., 5½d.; ¾ in., 5d.; dog spikes, 35s. per 100 lb.; rivets, ¼ in., 11d.; ⅜ in., 9d.; ½ in. and ⅝ in., 37s. 6d. to 40s. per 100 lb., ⅝ in. 50s.; brass rods, ¼ in. 1s. 5d.; ⅜ in. 1s. 3d.; ½ in. 1s. 2d.; ⅝ in. upwards, 1s. 1d. per lb.; hexagon brass rods, 1d. lb. extra; copper rods, ⅜ in., 2s.; ½ in., 1s. 11d.; ⅝ and upwards, 1s. 9d. lb.; tool steel, 2s. 11d. to 3s. 3d.; brass sheets, 1s. 10d. to 2s. lb.; copper sheets, ¼ in. to 18 gauge, 1s 10d. lb.; 20 gauge, 1s. 11d.; 22 gauge to 28 gauge, 2s. lb.; firebox copper, 2s. lb.; copper tubes, ¼ in., 3s. 3d.; ⅜ to ⅝ in., 2s. 6d.; ¾ to 4½ in., from 2s. to 2s. 4d. lb.; phosplier tin, 2s. 11d.; ingot tin (Lamb & Flag), 2s. 1d.; pig lead, £28 per ton; drill steel, 6½d.; hollow, 9¼d. 1½ in., 9d. to 10½d.; wire nails, 30s. to 35s.; shovels, 48s. to 60s. doz.; wheelbarrows, 40s. to 45s.; picks, 37s. 6d. to 50s.; pick handles, 19s. to [illegible]; [illegible], 11 in., 7s. 6d. to 8s.; 18 in., 9s. 6d.; 24 in., 13s. 6d.; 30 in., 17s. 6d.; 36 in., 25s.; barbed wire, "Shorthorn," 69 lb., 13½ gauge, 22s. per coil; plain galvanised fencing wires, No. 8 gauge, 100 lb. coils, 21s. 6d. per coil; No. 10 gauge, 100 lb. coils, 24s. 6d. per coil; No. 12 gauge, 100 lb. coils, 26s. 6d. per coil; bulb tee fencing standards, 14 lb., 19s. 6d. per dozen; 12 lb., 23s. 6d. per dozen; black baling wire, 14 gauge, 19s per coil, 100 lb.; 12 gauge barbed wire, 22s. per coil, 96 lb.; plain wire, No. 8 galvanised, 21s. per coil, 100 lb.; fencing standards, 12 lb., 20s. per dozen; droppers, 4 ft., 1½ lb., 3d. per dozen; screening, 3s. to 9s. 6d. per sq. yd.; cyanide, 1s. 7½d.; zinc shavings, 1s. per lb.; asbestos slate sheets in London, £15 to £25, and spinning fibres £50 to £150 per ton, with a dull market.

American Notes.

New York reports that returns from industrial centres that the coal strike had made serious inroads on steel and iron production, continuance of relaxed money rates and a rally of international exchanges contributed to a general improvement in conditions. United States Steel has risen to within a nominal fraction of par, and the independent steel concerns also responded to steady absorption. Included in the rise are motors, equipments, secondary rails and various industrials, such as rubber, leather, etc., but the principal dealings recently have been in Mexican Petroleum, Standard Oil of California, New Haven, Baldwin and Bethlehem, Crucible and United States Steels. The Calumet district, the General American Tank Car and Warner Malleable Iron Works of Hammond, amongst others, are all needing labour, which owing to its present dearth is preventing many industries from increasing their output. The dearth of labourers is ascribed to prevailing wage scales, a minimum of 28 cents an hour being the scale in some industries. Moulders of the steel business are in great demand, and skilled workers are being eagerly sought for.

The coal strike's effect on the iron and steel market has been seen chiefly in the advance of pig-iron prices and increased demand and stiffening prices for rolled products. Actual production of coal has changed little outside of the Connellsville district, where it is somewhat less, and the rate of steel works and rolling mill operations is about 75 per cent. for the United States Steel Corporation and close to 70 per cent. for the independents. Buying of steel has been stimulated by increased stability of mills to make complete deliveries, and consumers have found they must lay in stocks instead of drawing on mills week by week, as they have done for months. Some of the steel-making centres outside of Pittsburg have drawn upon the West Virginia and Kentucky fields for coal, and thus Buffalo, Youngstown and other central western by-product coke plants have been kept going. Carnegie Steel, which was running at 72 per cent. of ingot capacity prior to the strike, now is operating at about 70 per cent. Two large independent makers of plates, shapes and bars now are quoted $1·50 base Pittsburg. Locomotives placed with two builders in one week number 174, and 25 are under negotiation. Pending railroad car business indicates early buying of fully 16,000 cars.

Motor Cars and Trucks.

It is predicted that the Ford Motor Company will produce 1,100,000 cars and trucks this year—4,500 daily. The previous best yearly production was slightly less than 1,000,000. Ultimately the company would build plants in Germany and Russia. There is no intention to reduce the price of the Ford car now.

Timber and Building Materials.

Stocks of imported timber in the country are not heavy, though sufficient to meet requirements until shipments arrive from the Baltic. From Sweden f.o.w. goods were expected to be shipped during last month and from Finland in July and August. At the moment Swedish shippers are much higher in their prices than Finnish, and in both cases f.o.w prices are considerably higher this year, which points, of course, to higher levels as soon as present stocks are exhausted.

Timber prices:—3 x 9 deals up to 18 feet 1s.; over 18 feet 1s. 1d.; scantlings, 10½d.; beaver boards, 1¼d. to 1½d.; floorings, 6¼d. to 6½d.; ceilings, 4¼d. to 4½d.; Oregon, 5s. 6d. a cube; pitch pine, 7s. 6d. to 8s.; corrugated iron, 8d to 10d. with a firmer tendency. Furniture timber: Burmah teak, 17s. 6d. per cube here for first quality, 14s. 6d. for second at the coast; American oak, 1 in., 10½d.; 1½ in., 11d.; 2 in., 11½d., at coast; and Japanese oak, 1 in., 1s. 1d.; 1½ in., 2 in., 1s. 2d., at coast; West African mahogany, 1 in. to 4 in. thick, 26s. 9d. to 27s. 6d. per cube at coast; Rhodesian mahogany, 9s. per cubic foot at mills; Honduras mahogany, 30s. per cubic foot; American yellow pine, 1s. 6d. per foot at 1 x 12 here; American pine shelving, 10d. per ft.; 3-ply wood, 3 m.m. up to 5 m.m., alder and birch, 4d. to 6½d. per sq. ft.; oak and teak, 3-ply, 11d. per sq. ft. Prices for bricks remain unchanged at: Klompje bricks, 25s. per 100 at works; fire bricks, £10 per 1,000 at works; mixed, 70s.; wire-cuts, £4 10s. to £5; and £5 for pressed per 1,000, at kilns; columns from 20s. to 30s., according to size; roofing tiles, Marseilles, £25 per 1,000 at the works; chimney pots, 12 in., 7s. 6d.; 15 in., 9s.; 18 in., 10s. 6d.; dry red oxide, 16s. per 100 lbs.; white lime, 7s.; unslaked, 10s. 6d. per 180 lb. bag; 8 lb. bag, 1s.; blue lime, 4s. 3d.; blue plaster lime, 5s. 3d.; cement, 11s. 6d. a bag; damp course and roofing, 36s., 54s. to 55s. for 1 to 3-ply.

In the building trade things are moving slowly; in the opinion of a very big contractor very shortly things would move.

Second-hand Iron and Timber.

Dealers have little encouraging to report this week, but all are optimistic as to future business. One big dealer said we have waited so long and are prepared to wait longer, but things must improve, because there is a lot of work to be carried out which has been delayed by labour and other troubles. My informant seemed to be more optimistic than for months, and said that as soon as things had "braced" themselves he thought the future was not unhopeful. Stocks are still on the scarce side, and any jump which may eventuate any day may find the purchaser at a disadvantage. Iron remains at 6d. and timber is selling at 8d.

Electrical Goods.

Business in electrical wares is at the moment quiet, both in town and country, nor have inquiries from outside the Union been of a very satisfactory nature lately. The fact is, said an important dealer, people are awaiting the upshot of the Industrial Commission and other things, but immediately these are settled satisfactorily, and the hope is generally expressed that they will be, we should see things improve. There are no alterations in prices to record this week; lamps, which have recently receded, seem to have touched bottom, and the tendency is for them to advance.

Railway Earnings.

The railway earnings for the week ended May 13 total £384,703, being £25,297 below the estimate. The total from April 1 to May 13 is £2,354,665, which is £170,444 under the estimate for that period.

Railway Earnings.

For the week ended May 20 these totalled £362,778, as compared with £384,703 in the preceding week and £414,462 in the corresponding week of 1921, being £47,222 below the estimate. The revenue from April 1 has been £2,717,443, a decrease of £217,666 on the estimate.

Financial.

Lisbon cables that a Mozambique Loan of £5,000,000 is being negotiated in London.

Ninety-eight per cent. of the underwriting of the Straits Settlements Loan of £4,200,000 has been left on the hands of the underwriters. The Loan is quoted at 1½ per cent discount.

The Reserve Bank Statement for week ended May 27 shows ratio of cash reserve to liabilities to public of 83 per cent.

Bantjes Consolidated Mines, Ltd.

Tenders are being called for the sale of (1) the mining property, situate on farm Vogelstruisfontein No. 62; (2) plant, equipment and buildings, including modern battery of 90 stamps and plant capable of treating 23,000 tons monthly; (3) Florida Township; and (4) freehold land.

Extension of Southampton Docks.

The London and South-Western Railway has submitted to the Corporation plans for reconstruction, including a line of piers, dry docks, and the reclamation of 640 acres of mud land. The cost is estimated at several millions sterling, and the scheme will take years to complete, but when finished Southampton will be one of the finest ports in the world.

A Russian Palestine Concessionaire.

A hydro-electric concession in Palestine has been granted to the Russian engineer Rutenberg, who, it is alleged, was Chief of the Police of Petrograd under Karensky and is now in New York trying to raise a million sterling to build a generating station at the Jordan and power houses at Haifa, Jaffa and Jerusalem. London is perturbed at such a concession going elsewhere in view of the many millions spent by Britain in Palestine.

German factories and municipalities are making large purchases of British coal. Last week they ordered over 1,000,000 tons.

Reports of German shipping companies record a favourable year owing to the low rate of exchange; both passenger and cargo boats were fully employed. The Hamburg-South American Line paid a dividend of 28 per cent., the Hamburg-North German Lloyd 10 per cent., and the Hamburg-Bremen-African Line 15 per cent.

Harnessing the Tides.

Forty American bankers are visiting France to inquire into the vast hydro-electric projects on the Rhone and in the Pyrenees. It is estimated that the harnessing of the Rhone would cost 500,000,000 francs.

Falling Cost of Living in Britain.

The *Labour Gazette* states that the average level of retail prices at May 1 stands at about 81 per cent. above the July, 1914 figure, as compared with 82 per cent. at April 1.

Roodepoort United Main Reef Gold Mining Co., Ltd.

TENDERS ARE HEREBY INVITED
FOR THE RIGHT TO PURCHASE OR TRIBUTE
the following portions of the Roodepoort United Mine

A. Kimberley East Section.
B. United Section.
C. No. 3 Section.

All these sections are equipped with hoisting plant-headgears, track, trucks, etc., which can be taken over at a valuation, if desired.

Full particulars can be obtained from the Manager, Roodepoort United Main Reef G.M. Co., Ltd., P.O. Box 172, Roodepoort.

Tenders should reach the Technical Adviser, Box 1242, Johannesburg, not later than noon on FRIDAY, 30th JUNE.

The highest, or any tender, will not necessarily be accepted

CARBIDE

——ALL SIZES——
IN 1, 5, 10, 50 lb. TINS
and 100 lb. DRUMS

Apply: MANAGER,
RAND CARBIDE, LTD.,
SOUTH GERMISTON
——— 'Phone 252 Germiston. ———

RHODESIAN TEAK & MAHOGANY

FOR MINING & BUILDING PURPOSES,
ANT, ROT AND DAMP RESISTING.

Sleepers, Guide Blocks, Deals, Scantlings, Flooring (Machined for Secret Nailing) and all kinds of Purpose-Made Joinery, Fencing Posts, Etc.

PRICES MODERATE.

RHODESIA NATIVE TIMBER CONCESSIONS,
35, PERMANENT BUILDINGS, HARRISON STREET, JOHANNESBURG.
Box 5530—Phone 3568—Yard: Eloff St. Extension

THE ROYAL BANK OF CANADA

HEAD OFFICE, MONTREAL.

LONDON, ENG.
PRINCES ST., E.C.

NEW YORK.
68 WILLIAM ST.

PARIS, FRANCE.
THE ROYAL BANK OF CANADA (FRANCE)

BARCELONA.
PLAZA DE CATALUNA 6

721 BRANCHES.

614 Branches in Canada and Newfoundland, also

107 FOREIGN BRANCHES.

ARGENTINE Buenos Aires (2 Branches).
BRAZIL Rio de Janeiro, Santos, Sao Paulo.
URUGUAY Montevideo.
VENEZUELA Caracas, Ciudad Bolivar, Maracaibo.
COLOMBIA Barranquilla.
COSTA RICA San José.

WEST INDIES

CUBA—Havana (9 Branches), Antilla, Banes, Bayamo, Caibarien, Camaguey, Camajuani, Cardenas, Ciego de Avila, Cienfuegos, Cruces, Cueto, Florida, Guantanamo, Jatibonico, Manzanillo, Matanzas, Moron, Nuevitas, Palma Soriano, Pinar del Rio, Puerto Padre, Sagua la Grande, Sancti Spiritus, Santa Clara, Santiago de Cuba, and at twenty other points.

PORTO RICO—San Juan, Mayaguez & Ponce. **HAITI**—Port-au-Prince, &c.

DOMINICAN REPUBLIC—S. Domingo, La Romana, Puerto Plata, Sanchez, S. Pedro de Macoris and Santiago de los Caballeros.

MARTINIQUE—Fort de France.

GUADELOUPE—Pointe-à-Pitre and Basse Terre.

BRITISH WEST INDIES — Antigua, Bahamas, Barbados, Dominica, Grenada, Jamaica, Montserrat, Nevis, St. Kitts, St. Lucia, Trinidad and Tobago.

BRITISH GUIANA—Georgetown, New Amsterdam, &c.

BRITISH HONDURAS—Belize.

CAPITAL PAID UP & RESERVES $41,000,000
TOTAL RESOURCES - $500,000,000

The Crown Diamond Mining and Exploration Co., Ltd.

(Incorporated under the Laws of the Orange Free State.)

NOTICE IS HEREBY GIVEN that a Special General Meeting of the Crown Diamond Mining and Exploration Company, Limited, in terms of Articles [illegible] and [illegible] of the Company's Articles of Association, will be held at Lewis & Marks Building, President Street, Johannesburg, **on Friday, the 30th day of June, 1922, at 12 o'clock noon**, for the purpose of considering and if thought fit passing the subjoined Special Resolutions with or without amendment.

The Transfer Books of the Company will be closed from the 1st June to the 30th June 1922, both days inclusive.

RESOLUTION.

That the Capital of the Company be reduced from £250,000 divided into 250,000 shares whereof 220,000 shares have been issued to £73,333 divided into 293,332 shares of 5s. each and that such reduction be effected by cancelling capital to the amount of £30,000 represented by 30,000 shares of £1 each which have not been issued and by cancelling Capital which has been lost or is unrepresented by available assets to an amount of £146,667.

That the holders of the 220,000 shares of £1 each shall receive four 5s. shares in the reduced capital for every three £1 shares held in the original capital as nearly as may be but no holder shall be entitled to claim a fraction of a share. The present holders of shares shall surrender the certificates for their shares in exchange as aforesaid and shall not be entitled to vote or otherwise participate in the Company until they shall so have exchanged their shares. The shares representing fractions aforesaid shall be sold by the Company and the proceeds shall be paid to the owners of the fractions in accordance with their respective claims. The Directors shall be empowered to fix a time being not less than 30 days from the date of this Resolution within which all share certificates must be handed in for exchange and all Shareholders who shall fail to so exchange their certificates within the time specified shall be taken to have abandoned their rights in the Company and shall cease to have any further claim or interest in the Company. The Directors shall fix the manner in which Notices shall be given and the time when such Notices shall be taken to have been received from which date the period fixed in the Notice shall run and may in their absolute discretion extend the time for so exchanging the shares in any particular case for cause shown to their satisfaction.

AND NOTICE IS HEREBY FURTHER GIVEN that should the above Resolution be passed by the required majority, the subjoined Resolution will be submitted as a Special Resolution, namely:—

1. That the capital of the Company as reduced to £73,333 divided into 293,332 shares of 5s. each, be increased to £225,000 by the creation of 606,668 new shares of 5s. each ranking equally with the 293,332 shares.

2. That of the said new shares so created, 320,000 fully paid shares of 5s. each shall be allotted at par in satisfaction of the Company's indebtedness of £80,000.

3. That of the balance of the said new shares the Directors be and are hereby empowered to offer 200,000 shares for public subscription at par on such terms and conditions and at such times as they shall think fit; preference in allotment, however, to be given to existing shareholders pro rata as nearly as may be to their holding in the reduced capital. Subscribers for not less than 10 shares of such new issue to be entitled to an option to subscribe for and take up shares in the Company at the price of 7s. 6d. per share during a period of one year from the date of issue, at the rate of 5 shares for every 10 shares of the said 200,000 shares taken up by them, but only in respect of every full number of 10 shares so subscribed for. The conditions governing the exercise of such option shall be fixed by the Directors.

4. That in consideration of their having underwritten the said issue of 200,000 shares, Messrs. Lewis & Marks, Limited, be granted an option at 7s. 6d. per share to subscribe for and take up the balance of 86,668 shares during a period of one year from the date of issue of the said 200,000 shares; the said firm to have the right to call for such shares in such quantities and at such times as they shall think fit.

5. That in case any of the options granted above are not exercised, the Directors shall be entitled to deal with the shares comprised under such options as they shall think fit and may grant further options in respect thereof from time to time.

6. That the Directors be and they are hereby empowered to pay a commission not exceeding 5 per cent. for the underwriting of the whole or any part of the said issue of 200,000 shares, or for subscribing or procuring subscribers for same.

7. That to provide for shares required to satisfy any option exercised in terms of Resolution 3 above and generally for any other purposes of the Company the Directors be and they are hereby empowered whenever they shall think fit to increase the capital of the Company either by one increase or by separate increases from time to time up to a maximum amount of £250,000 by the creation of shares of 5s. each representing the amount of such increase or increases respectively ranking equally with the then existing shares in the Company, which new shares in excess of the numbers required to satisfy the options aforesaid, they are hereby empowered to offer for public subscription or otherwise to deal with same as they shall think fit, including the giving of options over same or over a portion thereof and may pay a commission not exceeding 5 per cent. for the underwriting of such shares or for subscribing or procuring subscribers for same, and they are hereby empowered to cause the necessary supplementary articles and/or any other documents required to be executed for the purpose of registering such increase or increases of capital.

8. That the Chairman, Mr. Theodore Marks, be and he is hereby authorised to sign the necessary supplementary articles on behalf of the Company for the purpose of registration and to sign all such other documents and writings necessary or convenient in connection with carrying out the conditions set forth in the above Resolutions in connection with both the reduction and the increase of capital.

By Order of the Board,

THE AFRICAN AND EUROPEAN INVESTMENT
COMPANY, LTD., Secretaries.
Per R. W. TOWNSEND

Lewis & Marks Building,
P.O. Box 2567, Johannesburg.
29th May, 1922.

The Crown Diamond Mining and Exploration Co., Ltd.

(Incorporated under the Laws of the Orange Free State.)

Head Office, Lewis & Marks Building,
P.O. Box 2567, Johannesburg,
29th May, 1922.

Dear Sir (or Madam),—

For some time past work on your property has been chiefly concentrated on exploring the western section of the Mine. A circular was addressed to Shareholders on February 21st, 1922, communicating a statement by Mr. C. B. Kingston, the Consulting Engineer, on the results obtained to that date. A further report by Mr. Kingston is now enclosed, which summarises the position and contains particulars of the washing tests made of the blue ground from this section of the Mine. A summary of the tests gives a total of 6,610 loads treated, yielding 970 carats of diamonds, or an average of 14.68 carats per 100 loads. The Board of Directors consider that the results obtained justify a vigorous policy in further exploring and opening up this western section of the Mine and in adopting the Consulting Engineer's recommendations to reconstruct and extend the plant to enable it to treat a minimum of 50,000 loads of blue ground monthly at an estimated cost not exceeding 2s. 6d. per load. A sum of £50,000 will be required for these purposes and to provide working capital. The Company is without funds and has only been enabled to carry on work for some considerable time past, and in particular the recent exploratory work, by means of loans which have been made to it. These loans, with accrued interest, amounted, at April 30th, 1922, to £79,051 8s. 4d., of which £40,000 is secured by a bond over the Company's assets. Further sums are being advanced to enable the Company to meet its current expenditure, amounting at present to approximately £1,500 a month. It has therefore been decided to submit to Shareholders a scheme for the reconstruction of the Company's capital, and a copy of the Special Resolutions to be put before a Special General Meeting of Shareholders to be held on Friday, June 30th, 1922, is enclosed. It is proposed to reduce the present issued capital from £220,000 to £73,333 and to reduce the nominal amount of each share to five shillings, each Shareholder to receive four shares of the nominal value of 5s. each in the new capital for every three shares of £1 each in the present capital; thereafter to increase the capital from £73,333 to £225,000 with the power to further increase to £250,000. It is also proposed to issue 200,000 ordinary shares of 5s. each at par, preference in allotment to be given to Shareholders pro rata to their holding in the reduced capital, subscribers to this issue to have an option, exercisable at any time within one year from date of issue, to take up 5 further shares at the price of 7s. 6d. each for every ten shares so subscribed.

Subject to the passing of the Resolutions, the whole issue of 200,000 ordinary shares will be underwritten, and it has been arranged to liquidate the Company's indebtedness to an amount of £80,000 by the issue of 320,000 ordinary shares of 5s. each at par and to cancel the bond on the Company's property.

Notwithstanding the recent depression in the Diamond Market, there is a steady demand for the class of stones produced by this Mine.

Under the Precious Stones Ordinance (1904) of the Orange Free State, the Company's Mine is specially exempted from the Government's right to a four-tenths interest in diamond mines as provided for in that Ordinance, and is subject only to a payment of 5s. per claim per month to the Government, so that the whole of any profits made will be available for distribution to Shareholders.

Shareholders who are unable to be present at the Meeting are asked to fill in the enclosed proxy and return it to the Secretaries, to reach them not later than Wednesday, the 28th June, 1922.

By Order of the Board,

THE AFRICAN AND EUROPEAN INVESTMENT
COMPANY, LTD., Secretaries.
Per R. W. TOWNSEND

Johannesburg, 29th May, 1922.

The Week's Meetings.

THE MODDERFONTEIN DEEP LEVELS, LTD.

A Profit of £916,824.

The Coy.'s Finances and Ore Reserves.

The twenty-first ordinary general meeting of shareholders in the Modderfontein Deep Levels, Ltd., was held on Friday morning, the 26th May, in the Board Room, Consolidated Building, Fox Street, Johannesburg.

Mr. P. M. Anderson presided. The total shares represented by proxy or personally at the meeting numbered 683,050. In moving the adoption of the report and accounts for the year ended 31st December, 1921, the chairman said:

The reports and accounts were issued to shareholders nearly three months ago. You will, therefore, be aware that the features of the past year's operations have been the records established in the tonnages mined and milled, in the yield per ton, and in the profit earned.

The very gratifying increase in the yield to over 11 dwts. enabled the previous highest production to be passed by nearly 12,500 ounces, which, with gold at its standard value, would have given an additional revenue of about £53,000. As, however, the average premium of about 25 per cent. obtained for the year was 3½ per cent. lower than that for the previous year, the net increase in the revenue from gold was only £11,000. The profit of £916,824 derived from the year's production of 280,355 ounces was £25,516 ahead of the previous record, this being, of course, partly due to the higher yield I have just mentioned, but mainly to a reduction in working expenditure of £14,500, equal to nearly 7¾d. per ton

Working Costs.

On reference to the table of results since the commencement of milling operations, contained in the report, it will be seen that there remains a considerable margin for further reduction in working costs, as last year's figure of 22s. per ton is, approximately, 35 per cent. higher that the figures for the years 1916 and 1917. Though a return to the levels of these years cannot be expected in the immediate future, it is hoped that a level materially nearer to normal may be reached in the current year. In this connection you will, no doubt, have noted with satisfaction that the figure for last month was nearly 2s. per ton below the average of last year. In some quarters it has been assumed that this reduction is misleading and due to no expenditure having been incurred for development. I, therefore, take this opportunity to correct that wrong impression. Though no development work was actually undertaken during the month, this fact had no influence whatever on the working expenses as these included the usual charge for development redemption of 1s. 6d. per ton milled.

It would serve no useful purpose to review in other respects the current year's operations to date, as these have, of course, been quite abnormal owing to the strike and attempted revolution. It is very gratifying, however, to be able to record that a working profit of £52,874 was earned in respect of the first quarter, although the mill was idle for nearly two months and heavy strike expenditure had to be met. The profit for April was £53,959.

Turning now to the accounts, the profit on working was increased by interest, rents and other sundry revenue, to a total of £932,391 which, with the unappropriated balance of £163,461 brought forward from the previous year's accounts, gave a total of £1,09[illegible] to be dealt with. Of this, £161,299 went in taxation, £3,012 in charitable donations, etc., £1,000 to the directors in accordance with the articles of association, £1,091 was written off as depreciation, and £750,000, or 150 per cent. on the capital of the company, was distributed to the shareholders by way of dividends, leaving a carry-forward of £179,456, or some £16,000 more than at the close of the previous year.

Strong Financial Position.

As your company has no further expenditure to incur on capital account, its financial positon may, I think, be regarded as distinctly sound.

The technical reports in your hands have given you details of the development work done during the year, and I am sure you will have been gratified to read that the footage accomplished was 278 feet in excess of the preceding year, and continued to disclose very satisfactory values, almost identical with those of the preceding year. As the result of this work the ore reserves when remeasured at the end of last year showed a further increase of 275,000 tons, the assay value being approximately the same at 9.3 dwts., and the width unchanged at 77 inches. This increase brought the reserves to a total of 4,375,000 tons, or over eight years' supply for the present mill.

With regard to future development there remains several years' work to be done in undeveloped areas which are confidently expected to contain ore of as good value as that exposed in the past. It is proposed, however, to make certain ventilation connections, and to do some prospecting in areas which are expected to contain low grade ore. It is therefore possible that the development results to be published with future quarterly reports may at times be below the average value of the mine. I mention the point in order that you may be prepared, should this occur, and need not have any misgivings as to the value of your mine.

A Valuable Safety Factor.

Reference has been made at several previous general meetings to the value as a safety factor, of the dump of stope and development ore on the surface. The recent strike and the subsequent unfortunate breakdown of the rock-hoisting engine have shown that the importance of this asset was not exaggerated. In spite of the repairs to the engine necessitating a complete cessation of hauling operations for six weeks, the existence of this dump made it possible to keep the mill fully supplied with ore during the whole of this period. The quantity of ore taken from this dump during the strike and while the rock-hoist was out of commission was 102,300 tons, leaving still available 73,300 tons. As you will have seen in the Press, the necessary repairs to the rock-hoist were completed on the 15th inst., since when normal operations in both mining and development have proceeded uninterruptedly. That work on a normal scale is possible so soon after the recent strike is due mainly to the popularity of your mine among the natives, which places it in the fortunate position of having available a sufficient labour force to meet present needs.

It is, I think, unnecessary for me to refer more than briefly to the company's recent purchase from the Custodian of Enemy Property of the balance of its shares formerly held by ex-enemy nationals. The circular issued a fortnight ago has put you in possession of the details, and I would merely remind you to-day that the offer to shareholders to take up these shares closes on Tuesday next.

It is with a deep sense of loss that your directors record the death during the year of our late chairman, Mr. M. McCormack, and I feel sure you will wish to endorse the expression of sympathy which has been conveyed to his relatives by your board.

I wish to place on record not only the board's high appreciation of the excellent services rendered to your company during the year under review by the staff and employes generally, but also its high appreciation of the loyalty of those officials who so ably protected your company's interests during the recent industrial upheaval. I now beg to move:—"That the directors' report and audited statements of account, as laid on the table, be approved and adopted, and that all matters and things undertaken and discharged by the directors on behalf of the company be, and they are, hereby confirmed."

The report and accounts were adopted.

CITY DEEP.

A Record Year.

Increased Development.

Improving Returns.

Mr. F. R. Phillips presided at the annual meeting of the City Deep on May 26, and in the course of his speech said:—

In examining the report and accounts of the company for the year ended December 31, 1921, I think we can only regard the results achieved as exceedingly satisfactory. The profit earned constitutes a record in the history of the company, the balance of working expenditure and revenue account amounting to £718,584 18s. 7d., as against £644,184 5s. 5d. for the preceding year.

This result is all the more gratifying when it is realised that the additional revenue obtained owing to the increased price of gold over its standard value decreased by £34,238 as compared with 1920. Nevertheless, it is significant that the higher price obtained for gold accounted for 62 per cent. of the profit earned, the working profit with gold at 84s. per fine ounce being £270,140, and the additional revenue represented by the difference between 84s. per ounce and the actual price realised amounting to £441,376.

Record Tonnage Crushed.

The factor chiefly responsible for the increased profit was the amount of tonnage crushed, which was greatly in excess of anything previously accomplished. The tonnage milled was 995,100 tons, as against 862,500 tons in 1920, and 617,800 tons in 1919. This increase was due to the additional native labour supply, acquired from the City and Suburban Mine, and to better machine efficiency.

If you compare the manager's report for 1921 with the previous year, you will notice that there was an increase of .26dwt. per ton in the yield on the tonnage milled, but this was more than offset by the fall in the price of gold. The result was a decrease in revenue of 1s. 1d. per ton milled. There was, however, a slight decrease in working costs of 3d. per ton milled, the net result, therefore, being a decrease in profit of 10d. per ton milled, as compared with the preceding year. When we take into account this decrease and the fact that there was an increase of 10,108 feet, exclusive of lifts, in the amount of de-

[illegible] the years 1915-1916, when approximately the same amount of development footage [illegible].

Working Costs and Profits.

The working costs for the year under review [illegible] 1921 [illegible] increase of [illegible] 1s. 6d. per ton. The reasons for the increase, which has been general, have [illegible]. These include the high cost of stores, the increased remuneration to white and native employees, and heavy charges for the Phthisis Compensation Fund. Every endeavour is being made to reduce costs, and with the increased efficiency which freedom from trades' union restrictions should bring, together with lower costs [illegible] improvement may be expected. The development position of the mine, however, is such that a vigorous policy must be pursued and, in consequence, heavy expenditure in this direction must be expected.

The net profit for the year, namely £718,584 18s. 7d., together with the unappropriated balance of £303,291 0s. 1d. brought forward from 1920 and a small amount in respect of forfeited dividends, gave a total credit of £1,022,558 16s. 11d. to the appropriation account, and was allocated as follows:—

Amount expended on capital account less amount recovered under Bewaarplaats Act	£96,202 18 4
Government and Provincial taxes	114,438 14 3
Dividends Nos. 18 and 19 of 20 and 17½ per cent. respectively	485,625 0 0
	£696,266 12 7

leaving a balance unappropriated of £326,292 4s. 4d. Of this balance £144,574 17s. 6d., was represented by net cash, after allowing for liabilities.

Increased Development.

Turning now to the operations for the past year, the outstanding features were the large increases in the development footage accomplished and in the ore milled. But notwithstanding the great amount of development footage accomplished, the ore mined from the reserves was considerably in excess of that replaced, with the result that upon a re-calculation the reserve estimated at December 31 showed a decrease of 670,000 tons at a slightly lower grade.

The consulting engineer, in his report, has referred to this decrease. [illegible] the tonnage [illegible] somewhat reduced for the reasons given by him, namely (1) the abnormal but necessary amount of dead work carried out, and (2) the value of a certain portion of the developed tonnage not yet having been exposed by [illegible]. It must be borne in mind that the difficulties of the situation have been somewhat intensified owing to the fact, hereafter mentioned, that only poor values were encountered in a considerable area to the west of No. 2 shaft.

The fact that an increased development programme is necessary is fully realised, and every endeavour is being made to improve the position. This is indicated by the increase in the monthly development footage, which averaged 2,596 feet for the last six months as compared with an average of 1,959 feet for the first half of the year. It must be understood, however, that it will not be possible to effect any appreciable improvement by the end of the current year.

At the end of the year No. 2 incline shaft had reached a point [illegible] the 22nd level, at a vertical depth of 5,311 feet below the surface. During the first four months of the current year it was deepened a further 24 feet and there now only remains 176 feet for it to be sunk to its final depth. The new hoist at this shaft was completed in May, and has greatly assisted sinking operations on this section of the mine. The new hoist at No. 1 incline shaft was completed on May 1, 1922.

During the year the south shaft was sunk a further [illegible] feet. The first stage in the sinking of this shaft was completed in December at a depth of [illegible] feet below the collar, and the connection between it and No. 2 incline shaft, via the 17th level crosscut, was made on April 21 in the current year. The permanent equipment of this portion of the shaft will be dealt with without delay. In this respect I should remind shareholders that a large amount of capital expenditure will be required.

Development Values.

It has been the practice in the past for your chairman to give some indication of the most recent values exposed by development prior to the annual meeting. This year, unfortunately, the position remains much the same as at the end of the year, owing to the events to which I shall refer later. I would mention, however, that highly payable ore is indicated in the ground extending from the western boundary for a distance of about 1,000 feet. Intervening between this area and No. 2 shaft poor values have been encountered, whilst the district between No. 2 and 1 shafts still shows uniformly payable ground over a distance of 4,000 feet. The broken area, referred to at previous meetings, east of No. 1 shaft, has been passed through and good values have been obtained east of the break.

It has been decided to build a new compound for the housing of the natives acquired from the City and Suburban mine. A central position was selected and steady progress has been made with the erection. It is hoped that the compound will be in use by the latter part of August, and there is no doubt that the company will benefit both directly and indirectly from the money spent on this work.

The Devastating Strike.

Turning now to the events which have occurred during the first few months of the current year, it is hardly necessary for me to dwell at great length upon the devastating strike which took place on the gold mines and which lasted from January 10 to March 17. In the beginning of the strike all work on the property ceased, with the exception of certain essential services, such as pumping, which were carried out by the company's officials.

I cannot pay too high a tribute to the manager and to the officials of the mine. They displayed, under exceptionally trying and dangerous circumstances, a resourcefulness, a loyalty and devotion to duty for which we can only express to them our admiration and gratitude.

On February 11 the Prime Minister made an appeal both to the industry and to the men to resume work. On February 13 the mine restarted operations and a few men returned to work. The numbers of men returning gradually increased until by the first week in March, exclusive of officials, about 60 men out of a normal complement of about 830 men had been signed on. The declaration of a general strike on March 7 and the subsequent revolutionary outbreak eventually brought mining operations to a standstill. But on the restoration of law and order large numbers of men presented themselves for work, and on March 17 the strike was declared off by each individual union.

It is gratifying to note that no lives were lost among the officials, who had throughout the disturbances remained steadfastly at their posts in spite of intimidation, preparations for attack and indiscriminate shooting by revolutionary snipers. No damage of any serious nature was done to mining property. A special word of thanks is due to the police who were stationed on the property, and I cannot omit a reference to the exemplary conduct of the natives throughout the crisis.

A Quarter's Results.

As regards mining operations for the first quarter of the current year, unfortunately it is necessary to record a heavy loss, amounting to £36,352. Owing to the native labour force having been seriously depleted, it will take some time before normal conditions can be attained, and owing to the abnormal circumstances created both by the length and character of the strike, any figures relating either to tonnage milled or development footage for the period in question would be both useless and misleading. For the month of April, however, it is gratifying to be able to report a considerable improvement. The tonnage milled amounted to 69,200 tons, and the estimated profit earned will go far to wipe out the deficit of the preceding three months.

It must not be forgotten, however, that apart from actual losses incurred as a result of the strike, there is a loss of the profits which would have been made and which must now be deferred approximately to the end of the life of the mine.

Ex-Enemy Shares.

I must make a brief reference to the shares of enemy shareholders vested in the Custodian of Enemy Property of the Union of South Africa. The Central Mining and Investment Corporation, Limited, has recently concluded a deal with the Custodian, whereby the Corporation purchased the whole of the shares of all the companies under its administration. Included in this purchase were approximately 70,000 shares of your company. These were acquired at the price of 32s. 6d. per share. The Central Mining and Investment Corporation offered these shares to the company at the same price, plus 5 per cent. commission, and such share of legal and other expenses incurred in their acquisition. At a meeting of the board it was decided to acquire the shares from the Central Mining and that the interests of shareholders would best be served by cancelling them and thereby reducing the capital of the company by a corresponding amount. A general meeting of the company will be held in due course to effect this arrangement. While we consider that the price at which the shares were obtained was fair and reasonable to both purchaser and seller, it must be remembered that it was only possible to complete this business so satisfactorily because it formed out a small part of a very much larger transaction.

In conclusion, the Board desires to express its very cordial appreciation of the valuable services rendered during the year by the consulting engineer, Mr. A. J. Brett, by the manager Mr. Percy Sherwell, and by their respective staffs.

I now beg to move that the directors' report, balance sheet and accounts for the year ended December 31, 1921, laid before the meeting, be received and adopted.

The report and accounts were unanimously adopted.

ROBINSON G.M. CO.

Reduced Operations.

Life of Several Months.

Mr. F. Raleigh presided at the annual meeting of the Robinson G.M. Co., Ltd., on May 26, and in the course of his speech said:

Gentlemen. During the past year a working profit of £23,978 was earned as against £86,202 in 1920. Last year's profit is the lowest yet obtained in the 34 years of the company's history, and presages the end of the life of the mine. The recovery yield was only 4 dwts. per ton, which, at the average price obtained for gold during the past year, produced a revenue of 21s. 3d. per ton. At the normal price for gold the value of this yield would have been approximately 17s. per ton. It was only the fairly large scale of operations which enabled such a low revenue per ton to be worked at a profit. When taking into account interest and other receipts, depreciation on investments, etc., there was a net profit of £21,958 carried to appropriation account for the year.

After paying to shareholders £55,000 in two dividends of 1 per cent. each, the amount standing to the credit of appropriation account is reduced by £40,619 for the year. At the end of the year this account had a credit balance of £145,470, of which £66,750 is represented by the company's holding of Crown Mines shares.

Restriction of Operations.

Operations during the past year were conducted on a monthly basis of approximately 40,000 tons of ore, but towards the end of the year, owing to the falling price of gold, it became evident that the company could not continue operations on that scale, and that the time was approaching when they must be curtailed and the remaining better ore mined. It was hoped that the mine might struggle on for a few months longer on the normal tonnage output, but owing to a further drop in the price of gold, and a fall of rock in the main hauling shaft of the mine, during the recent strike, this was no longer possible, and the directors report before you advises the decision to reduce the tonnage output to that which can be mined from the better grade of ore remaining, say to about 12,000 tons per month.

The Effect of the Strike.

The recent strike of mine workers, which commenced on the 10th January, came to an end on 17th March, and on the resumption of work the lower scale of operations was inaugurated. Consequent on this change of policy, which is chiefly brought about by the lower price of gold, the low grade Main Reef ore remaining in the mine has practically been abandoned.

The first month's run on the new basis was for April, when 11,500 tons were milled, yielding a recovery grade of 7.734 dwts. It is difficult to estimate what profit will be made on the reduced scale of operations owing to the uncertain factor of price of gold, but the manager considers that the Company can continue to make profits for several months. The recent strike has caused a heavy loss to the Company, the results for the first three months of this year showing a working loss of £24,200. During April a working profit of £3,679 was earned.

Position at Date.

The Company's holding of Crown Mines shares remains unaltered. Dividends totalling 32½ per cent. were received during the past year on this Company's holding of 40,000 shares. The annual report of that Company for last year indicates that the development work of the year showed satisfactory results. Of the total quantity of ore exposed 79 per cent., or 2,250,000 tons, was payable, and was of an average value of 6.3 dwts.

The total available ore reserves of the Company amount to 8,511,200 tons, of an average value of 6.1 dwts., or an increase of 360,800 tons on the ore reserve position at the end of 1920 with fractionally lower values. The recent development continues to open up ore of good values. Costs with this company are now slightly less than 22s. per ton milled, which is an improvement of about [illegible] per ton on last year's figure.

In consequence of the short remaining life of the mine, I would draw your attention to the fact that when the company's name is removed from the scheduled mines under the Miners' Phthisis Act, a heavy assessment will be payable to the Phthisis Board. I cannot give you the amount, but I understand, consequent on amending legislation contemplated by the Government, the sum may amount to a very high figure, possibly £60,000 or more.

Enemy Shareholdings.

In regard to the enemy shareholdings, you will have noticed in the Press that the Central Mining and Investment Corporation, Limited, has just concluded negotiations with the Custodian of Enemy Property for the purchase of all of the enemy shares of the Central Mining-Rand Mines group. Included in this purchase are approximately 19,000 shares of our company, and, as these were offered to us by the Central Mining and Investment Corporation, Limited, your Board purchased them for the company at the price paid by the Central Mining and Investment Corporation, Limited, namely, 3s. 6d. per share, plus 5 per cent. commission and expenses incurred in the transaction. As it is not the Board's intention to dispose of these shares the benefit of their purchase will accrue to all shareholders when the company goes into liquidation.

Tribute to the Staff.

I cannot conclude without paying a tribute to Mr. G. Hildick Smith, our manager, and his staff for their unswerving loyalty and devotion to duty under most trying conditions during the recent strike on the Witwatersrand and the revolution which followed. Our mine, as shareholders know, is situated in what proved to be the worst storm centre. In consequence, the officials' position was a particularly hazardous one, and their behaviour in cheerfully facing great difficulties and grave risks in the interests of our company cannot be too highly praised. I feel sure I am voicing the opinion of all shareholders when I tender to them our grateful thanks for all they have done.

I regret to say that one of the company's officials, Mr. H. J. Grinyer, was killed in action at Dunswart during the revolution, and I know your great sympathy will be extended to the widow and children of our late official.

I also wish to record the Board's appreciation of the services rendered to the company by our consulting engineer, Mr. Stuart Martin, and the other members of the head office staff.

I now beg to move that the directors' report, balance sheet and accounts for the year ended December 31, 1921, laid on the table, be received and adopted.

The report and accounts were unanimously adopted.

KNIGHT CENTRAL.

Future of the Mine.

History of the Company.

The annual meeting of the Knight Central was held on May 26. The Chairman, in reviewing the year, said:

The company's operations during the past year show a considerable reduction in the working profit earned below that of 1920. The chief causes are, the lower price received for gold and a decline in the recovery yield of nearly 1 dwt., which, together accounted for a reduction of 6s. 4d. per ton in the revenue. As a set-off to these uncontrollable factors there was an improvement in the working costs of 3s. 7d. per ton, showing on balance, a decrease of 2s. 9d. per ton in the working profit. Last year's profit was again wholly due to the price of gold having ruled above standard; at standard rate for gold, the company would have made a loss of £55,023 or 3s. 3d. per ton.

The price obtained last year by this company for its gold averaged 105s. per fine ounce, being a reduction of 4s. 5d. per ounce below the price obtained in 1920. To-day's price is under 93s., or 12s. per ounce less than the average price of last year.

The total profit earned was £37,877, and the credit balance of appropriation account shows an increase of £37,918, bringing it up to £180,675 at the end of last year. In the directors' report will be found the particulars of this balance, showing that £161,788 was in the form of cash and investments after allowing for liabilities. The tonnage milled last year was the highest in the history of the company, which is evidence of energetic management.

Notwithstanding the high tonnage mined the ore reserves only show a decline of 2,900 tons for the year, chiefly due to the large tonnage obtained from reclamation work and blocks hitherto classed as unpayable. You will remember that the company acquired nearly eight claims from the Knights Deep in liquidation; a royalty of 1s. per ton is paid to that company, and 12,000 tons were obtained during last year from this source.

The Strike.

You are aware that since the close of last year a prolonged strike of the mine workers on the Witwatersrand took place. This was in consequence of the Chamber of Mines having notified its intention to introduce certain alterations in the conditions of employment as from February 1 in order to meet the falling price of gold. The strike lasted from January 10 to March 17. During the quarter ended March 31 the company milled 34,570 tons only, and incurred a working loss of approximately £15,000. The native labour force at the mine was depleted during this period by 750, equal to 32 per cent. of the numbers on hand at the end of December.

Soon after the strike occurred the board went very fully into the question whether the mine should be closed down permanently to avoid inevitable losses. The difficulty was to know how long the strike would last, and whether its cost to the company would exceed any profit remaining in the mine after the termination of the strike, plus £10,000 worth of underground plant which would be lost by flooding. As you know, the board saw the strike out, operations being continued on a reduced scale throughout that period.

Position of the Mine.

The consulting engineer states in his report that the mine may not survive the end of this year. I have dis-

[illegible] the probabilities for the future with the manager, and whilst the [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] profits until the end of this year. There is thus every chance of the board's decision proving to be the right one.

Development work in the mine is not being carried out on a scale commensurate with the continuation of mining operations. This, as you know, is in consequence of the low percentage of payability encountered south of the Simmer Dyke. The life of the mine is limited to the small tonnage remaining in reserve, supplemented by reclamation tonnage and what can be obtained from the Knights Deep claims purchased. There are no new factors which would warrant the opening up of the very large claim area held south of the Simmer Dyke.

The heavy loss of native labour during the strike is still not made up, and during April the company lost on balance a further 31 natives as between the beginning and end of the month. This shortage had a very adverse effect on the company's operations for that month, as only 19,100 tons could be milled, and a working loss of £[illegible] was occasioned. At the present time the labour position at the mine shows an improvement, there being an increase of 335 natives since the 1st instant, and the manager expects that a profit will be made during the current month

Miners' Phthisis.

The directors' report contains a reference to the possibility of the company's estimated liability to the Miners' Phthisis Board on the closing of the mine exceeding the figure given by me at the last annual meeting. This is due to contemplated amending legislation not yet in force, under which closing mines may have to bear their portion of the whole outstanding liability in respect of miners' phthisis created on the scheduled mines which present legislation does not provide for. I stated at the last meeting that the sum would be approximately £27,000, and as you will realise it was based under the then existing Act which still obtains to-day.

Two years ago I gave you the figures of this company's financial history. In view of the investigation which is now being made into the affairs of the gold mining industry by a Government Commission it would not be out of place for me to bring them up to date.

History of the Company.

The company was formed 27 years ago, shaft sinking being commenced in 1896, and the Main Reef series struck in 1899 at a depth of approximately 2,000 feet. The amount of cash working capital put into the mine on the formation of the company, and in the years following until 1908 was £847,000. This is quite apart from the purchase price of the mining ground, which took the form of vendors' shares. The above sum was solely expended on the development and equipment of the mine.

In addition, up to the end of last year £249,000 of the profits earned were reinvested in the undertaking, also solely on equipment and development. It is thus seen that the cash capital invested in the mine totals £1,096,000. Since milling started in 1909 3,801,078 tons have been crushed, which have produced gold to the value of £4,561,687, against an expenditure of £4,021,814 for working costs, leaving a working profit of £539,873, to which can be added interest and sundry revenue earned £20,101, or a total profit of £559,974.

This profit has been dealt with as follows:—

Paid in taxes...	£17,785
Paid in dividends to shareholders	112,500
Reinvested in the undertaking	249,013
Balance of cash and cash assets as at December 31, 1921	180,676
	£559,974

To the cash and cash assets on hand can be added the break-up value of the plant.

The sum already paid in dividends and the cash and cash assets (total of which is £293,176), plus the break-up value of the plant when the mine closes down, is about all the shareholders will get over a period of 27 years out of an investment of £847,000; that is, they will lose more than half the capital put up, and have nothing for interest on the working capital provided, without taking into account any sum for the purchase of the claims owned by the company. Interest at 6 per cent. per annum for 20 years only, on the working capital provided, should have returned over £1,000,000 to shareholders.

During the period referred to the company has expended the following sums—

On capital expenditure	£1,096,000
On working costs	4,021,800
On taxes	17,800
	£5,135,600

practically the whole of which has been expended in wages, plant, stores, etc.

Ex-Enemy Shares.

From an intimation in the Press, shareholders will no doubt have noted that the Central Mining and Investment Corporation, Limited, has concluded negotiations for the purchase from the Custodian of Enemy Property of all the enemy shares of the Central Mining Rand Mines Group. There are included in this block approximately 52,000 shares of our company, which were offered to us and purchased by your board at the price paid by the Central Mining and Investment Corporation, Limited, viz., 3s. per share, plus 5 per cent. commission and expenses incurred in the transaction. As it is not the board's intention to dispose of these shares the benefit of their purchase will accrue to all shareholders when the company goes into liquidation.

In conclusion, I feel sure I am voicing the opinion of all shareholders when I pay a tribute to the loyalty and devotion displayed by our manager, Mr. T. McAlpine, and his staff during the recent upheaval. It is difficult, unless one has been in close touch with the mine, to appreciate the risk they ran and the difficulties they faced in our company's interest, and our grateful thanks are given to them for what they have done.

I also wish to record the board's appreciation of the good work done by our consulting engineer, Mr. A. J. Brett, and the head office staff during the year under review.

I now beg to move that the directors' report, balance sheet, and accounts for the year ended December 31, 1921, laid on the table, be received and adopted.

The report and accounts were unanimously adopted.

In accordance with a resolution passed by a majority of shareholders present, a poll was taken on May 27 on the following issue: "That it be resolved by this meeting that a dividend be paid out to shareholders within the next two months, if possible, the directorate here to state what they think it is possible to pay out to us as shareholders."

No votes were cast in favour of the resolution, but there were cast against the resolution 163,633 votes. Of these the scrutineers stated that 26,311 votes were doubtful from a legal point of view.

The Chairman thereupon declared that the resolution passed at the meeting held the previous day had not been carried

BRAKPAN MINES.

Ore Reserve Position.

Overmining Question.

The Recent Labour Outbreak.

Mr. F. R. Lynch presided at the annual meeting of the Brakpan Mines on May 29, and in the course of his speech said:—

The results of mining operations for the past year are fully set out in the annual report and accounts, and shareholders have had an opportunity of making themselves conversant with the details. It will, therefore, be necessary for me only to draw your attention to the more important features. In Brakpan Mines we have a large property, the major portion of which is unexplored, and it is desirable to push development forward as rapidly as possible. During the past year the development footage accomplished totalled some 22,555 feet, of which 1,024 feet was driven from the new No. 3 and No. 4 shafts. The sinking of these two shafts to their final depth was completed during the year, and immediately the necessary stations, etc., were completed, work on the primary haulages was started in order to make the necessary connection with the older portion of the mine. The connection between the No. 2 and No. 3 shafts was effected on May 8, and now the equipment of the No. 3 shaft is being proceeded with as rapidly as possible. This connection was a matter of urgency for the proper ventilation of the underground workings, and it would have been completed in January last if the work unfortunately had not been delayed by the strike.

Ore Reserve Position.

One might reasonably expect that such an extensive development programme would have resulted in a considerable increase in the ore reserve, but unfortunately this was not the case during the year under review. At the 31st December last, the payable ore reserve was calculated at 2,423,230 tons averaging 8.61 dwts. over 68.13 inches, or 587 inch dwts. as compared with 2,526,517 tons averaging 8.88 dwts. over 70.08 inches, or 622 inch dwts. a year earlier. This is a reduction of 103,287 tons in the reserve of payable ore, while the value is slightly decreased. You will no doubt realise that in order to open up the mining area a considerable footage has to be driven in virgin ground, of which a large proportion must inevitably be in country rock. When secondary development is carried out from the primary haulage ways, it is hoped that the work which has been done will have a considerable bearing on the future ore reserve.

The Year's Results.

The tonnage crushed during the year totalled 659,800 tons, which is an increase of 63,300 tons over the previous year. The yield was declared at 34s. 0.17d. per ton milled, a fall of 2s. 5.43d. per ton, but as a set off against this, working costs show a reduction of 2s. 4.26d. at 27s. 2.36d. per ton. The welcome reduction in working costs was mainly due to improved efficiency in breaking rock, although some improvements were made in other directions. For the current year a yield of between 33s. 0d. and 34s. 0d. per ton is expected. We anticipate that when normal conditions are obtained a reduction in costs will be effected, but it is impossible at present to say to what figure working costs will drop. The results so far obtained, therefore, and probably those for June and July as well, should not be taken as the standard for the year. During the strike period our native force was seriously depleted, and although we expect to receive our full complement at an early date, it must be remembered that it takes some time before the native recruits are sufficiently trained to do a proper day's work.

Although the declared yield is returned at 34s. 0.17d. per ton, the actual yield for the year averaged 36s. 5.53d. Your directors, having in mind that heavy capital expenditure would have to be incurred in connection with the equipment of the lease area, and also that there were no capital funds to draw upon, decided to overmine for a short period in order that a sum of £100.000 in excess of the average yield of the mine should be accumulated. In all, 19,116 ozs. of fine gold were placed to gold reserve, the standard value being £80,723. The overmining enabled us to take advantage of the premium on gold, and the actual value of the gold won was £100.619, or £20.000 in excess of its standard value. Difficult times call for extreme measures, and in this case the average value of the areas mined from was only .42 of a dwt. above the average value of the payable ore reserve; therefore it had little influence on the value of the present ore reserve. I shall refer to this point more fully when dealing with the results of this year's operations. Of the 22,555 feet of development, 13,160 feet were sampled and 5,425 feet, equal to 41.2 per cent were in payable areas, the average value being 15.2 dwts. over 38.86 inches, equal to 591 inch dwts. The percentage of payability is lower than that obtained in 1920, but on the other hand the inch dwts. figure is slightly higher.

Development Progress.

I would like to draw your attention to the change in the position which has occurred in the bottom section of the Mine. Until recently we have been doing development work at points situated over 10.000 feet from No. 2 shaft, and you can imagine how great the difficulties were, not only to provide adequate ventilation and proper working conditions, but also to arrange for the transport of men and materials to and from these far ends. Now that the connection with No. 3 shaft has been effected, the position is quite different, and it will still further improve when the shaft is fully equipped. In addition, we have gained valuable points of attack now that No. 3 and No. 4 shafts have been sunk to the reef. We contemplate pushing out development towards the attractive district bordering against the State Mines property, and also establishing connection between No. 3 and No. 4 shafts at the earliest possible date, in order to be in a position to undertake the extensive development of the lease area. From these remarks you will understand that the position is considerably relieved, and that before long we shall be able to follow up any favourable development disclosures with a view to building up an ore reserve which is more in keeping with the capacity of the reduction plant.

Financial Position.

The total working profit for the year, exclusive of the value of the gold reserve, amounted to £490.246, or £52.000 less than in 1920, but this is more than accounted for by a reduction of £71.000 in the amount received from premium on gold. The amount to the credit of appropriation account was £630,254, made up of £34.089 carried forward from 1920, £495,545 working profit, and £100,620 from gold in reserve. This sum has been dealt with as follows:—£71,820 was appropriated for Government taxes, £24.169 was paid to the Government as its participation in profits, and £5.305 in respect of the Schapenrust claims. £49.493 was credited to development suspense. £180.000 was appropriated for capital expenditure, and £255,000 was absorbed in the payment of two dividends each of 15 per cent. The balance of £44,467 was carried forward. In order to meet the cost of development, a charge of 5s. per ton milled is made to working costs, but the footage driven last year called for a larger amount than the fixed working cost charge, and it was necessary to appropriate the balance out of profits. Our capital commitments required £180,000, therefore we had to raise £80,000 over and above the amount provided through the gold in reserve, and this was done from the revenue for the year. I am pleased to say that the Provincial gold tax was repealed during the year, and that the Provincial Government no longer has the power to tax the Mining Industry. There are two items in the balance sheet which call for comment. At the end of 1920 the amount invested in stores and materials totalled £132,332, of which £71,790 was for general stores and £60,542 for construction stores. At the end of 1921 the amount invested in general stores was £44,024, and in construction stores £12,159, making a total of £56,183, which shows a reduction of £76,149 for the year. Under the heading of "cash" you will notice an item of £7,129 11s. This amount was placed on fixed deposit with the Bank fur Handel und Industrie of Berlin prior to the outbreak of the Great War. As the result of a successful lawsuit against the Union Custodian of Enemy Property this deposit, together with accrued interest, has now been recovered.

Question of Overmining.

I have already referred to the overmining which took place during last year and the reason therefor. We are informed by the Consulting Engineer that he anticipates the year 1922 will see the end of our heavy capital expenditure, at any rate until such time as an increase in the plant may be justified. It is difficult at this moment to give an estimate of the amount that will be required to meet this capital expenditure, but as an approximation I might say that roughly £100,000 more or less will be needed. We have no capital funds to meet this expenditure, and therefore other means must be found. Various suggestions have presented themselves, for instance, providing the full amount out of this year's profits; paying a portion out of this year's profits and spreading the balance over subsequent years; and thirdly, following last year's procedure and providing the sum required by overmining. Well, gentlemen, it is a choice of three evils. The matter has not as yet been finally decided by the board of directors, but it is felt that to take the whole amount out of this year's profits would be unfair to present shareholders, more especially as we have already drawn upon profits since the acquisition of the lease area to such an extent that shareholders have suffered a rather heavier reduction in their dividends than the long life of the mine warrants. The same remarks apply to the suggestion to extend the period of payment over a few years, as in all probability we should, for certain periods have to pay interest on funds borrowed to meet the expenditure. We then come to the third alternative. Seeing that this is to be the end of the heavy capital expenditure, and provided that the mine is not unduly drawn upon —by which I mean that the ore reserve as a whole is not to be reduced in value to a greater relative extent than was done last year—I am personally of opinion that it is in the best interests of shareholders to provde the necessary funds by overmining, and thereby take advantage of any gold premium which may be obtained. Under the terms of the lease agreement it was obligatory upon the management to calculate the ore reserve half-yearly. This clause in the agreement has now lapsed, and, in view of the additional expense involved in making the estimate, it has been decided to revert to the old practice and the custom on these fields of making yearly estimates. No calculation of the ore reserve will, therefore, be made as at June 30 next.

The Recent Outbreak.

Before concluding my remarks I must refer to the dastardly outrage which was perpetrated at Brakpan Mines on March 10 last. From the commencement of the strike the manager, Mr. Brodigan, and his officials carried on essential services in order to preserve the mine for the time when the strike should be declared "off." Well, gentlemen, they were made to suffer a terrible penalty for their loyalty. Early on the morning of March 10 information was received that an armed commando was approaching to attack the mine, and Mr. Brodigan, with his 24 officials and 10 special police, decided to defend the property. The special police were each armed with a rifle and 25 rounds of ammunition, while the officials had only a few obsolete Martini rifles and a small quantity of ammunition amongst them, but they gallantly held the commando at bay for over an hour. The result of the unequal contest was inevitable, because, unfortunately, no relieving force was available, and when its ammunition was exhausted the small garrison was compelled to surrender, having sustained four slight casualties. After the surrender there ensued a scene of horror and brutality which simply beggars description. The mob surged through the property, clubbing, shooting, and murdering in all directions. Some of our men were shot in cold blood, others were simply battered to death, and it is a wonder that any were left alive. Four of the officials and four of the special constables were done to death, and of the rest only three escaped unscathed. I am sure we all wish to offer our deepest sympathy to the widows and families of those who were murdered, and our best wishes for the speedy recovery of those who were injured. The conduct of the defenders was beyond all praise; their bravery and devotion to duty will ever remain as an example of loyalty which, I venture to assert, has seldom been surpassed.

I must add that the conduct of the mine natives throughout all the difficult days of the strike was exemplary and calls for the highest commendation.

Ex-Enemy Shares.

During the past few days negotiations for the purchase of the ex-enemy shares in the company were brought to a successful issue by Sir Ernest Oppenheimer. There are approximately 80.000 shares involved, and the purchase price is 40s. per share. How the shares will be dealt with is still under consideration, but I anticipate that shareholders will have the right to apply for their pro rata, and I hope it may be possible to persuade the large holders, such as the Consolidated Mines Selection Company and the Rand Selection Corporation, to waive a portion of their rights for the benefit of shareholders. The purchase of the shares is guaranteed by the group, who will receive a commission of 5 per cent. on the purchase price.

I deeply regret [illegible] since our last meeting, of three of your directors, Messrs. M. McCormack, Chas. Marx, and E. J. Renaud, and I am sure you will join with me in wishing to record our appreciation of their good services to the company, and to convey our sincere sympathy to their relatives in their bereavements. You will be asked to confirm the appointment of Messrs. [illegible]

[illegible] M.L.A. [illegible] The [illegible] adopted.

DAGGAFONTEIN MINES.

Position Reviewed.

State Aid Invoked.

Mr. [illegible] presided at the annual meeting of the Daggafontein Mines on May [illegible] and in the course of his speech said:

As you will no doubt remember, [illegible] in March, 1921, informing them that in consequence of the funds of the [illegible] and the impossibility of raising fresh funds, your directors were reluctantly compelled to suspend all operations until such time as [illegible] possible to raise fresh capital. The annual general meeting was held on May 17th, 1921, and I took that opportunity of acquainting shareholders with the financial straits of the company, the amount of money it had borrowed in excess of share capital provided, and also the position at the mine. The sinking of the two shafts had been completed, and they had been connected underground by means of the main incline before operations were suspended. In all, some 14,595 feet of development had been accomplished, of which [illegible] feet were on reef and [illegible] feet had been sampled, giving an average value of 23.41 dwts. over 10.78 inches. Of the footage sampled, 2,660 feet was in payable ground averaging 30.11 dwts. over 15 inches, equal to a payability percentage of 18.7. Although these results are most promising, it must be remembered that the values are found in short stretches of reef which are not continuous, and therefore undue weight should not be given to them.

Difficulties Reviewed.

The difficulties which your company had to contend with were very great. The larger portion of the main incline was driven through a hard dyke, resulting in slow progress and high costs, and in addition a large body of water was struck in the south haulage which considerably impeded progress. These difficulties were successfully overcome, but, as I have said, work could not be continued because the company's funds had become exhausted. An endeavour was made to keep the mine dry, and with this object in view a tentative agreement on advantageous terms was entered into with the Rand Water Board under which they agreed to purchase all the water pumped from the mine, provided it could be rendered potable. Unfortunately, however, after exhaustive experiments, it was found impossible to render the water drinkable, and the agreement had to be abandoned. Early in August all material and plant liable to damage from water was withdrawn from the workings, and the mine was allowed to fill.

Development Promising.

I would like to impress upon shareholders that the suspension of operations was not due to any lack of confidence in the future of the property, nor has the result of development so far accomplished condemned the mine as an unpayable proposition, in fact, rather the reverse has been the case. It has been demonstrated that the area round the No. 1 Shaft is of low grade and considerably broken, but, on the other hand, as progress was made towards the west, the results were distinctly promising. The [illegible] report that the reef exposures in the station [illegible] supplemented by diamond drilling, gave an indicated value of 23.9 dwts. over 16.2ins., or 388in. dwt. for a total length of 750 feet, east and west of the shaft. Although the distance between our westerly workings and the workings of Springs Mines is considerable, there is every reason to suppose that when mining operations are resumed on our property and development is carried on towards Springs Mines, we should find an area of payable ground giving values more nearly approaching the results now being obtained in the eastern section of Springs Mines. If that should prove to be the case, Daggafontein Mines may yet prove to be as valuable a property as was originally anticipated.

In my remarks at our last annual general meeting I referred to the agreement whereby the Government permitted the Consolidated Mines Selection Company to exchange two mynpachten which it held on the farm Geduld for 172 Government claims on Daggafontein. It was a condition of the agreement that as soon as the farm was proclaimed the Consolidated Mines Selection Company should sell and Daggafontein Mines should purchase these claims for 69,042 Daggafontein Mines shares. The farm was duly proclaimed on November 22nd, 1921, and the agreement between the Consolidated Mines Selection Company and this company was carried out. Our claim holding now totals 2,058 claims, which is considered sufficient for a mining area provided the percentage of payability is normal. In the case of our property, however, the eastern section is unpayable, and we have consequently applied to the Government for permission to replot our mynpacht.

Government Invoked.

Towards the end of last year your directors, having come to the conclusion that the time was probably approaching when money would again be available for mining enterprise, wrote to the Government suggesting certain methods by which our endeavours to provide fresh capital to restart operations might be facilitated, such as the replotting of the mynpacht, the granting of an additional mining area, and relief from taxation. Although our application has, owing to legal difficulties, not proved successful so far, we still hope for sympathetic consideration by the Government. We are anxious to lose no possible chance of restarting this property, which will not only prove the value of the Far East Rand, but will also provide work for a considerable number of men who are unemployed as a result of the recent strike.

This country requires capital for the development not only of mining, but of other industries as well, and I think the Government should assist us as much as possible by agreeing to our proposals, which are designed to facilitate the raising of fresh capital funds, especially as a very large sum of money has already been absorbed in the preliminary development of the property. Since operations ceased every endeavour has been made not only to reduce expenditure, but also to dispose of the company's saleable assets, such as stores and materials, and shares and interests in other concerns. Considerable reductions had been effected up to the end of the year, and further sales are being made from time to time. During the past few days negotiations for the purchase of the ex-enemy shares in the company were brought to a successful issue by Sir Ernest Oppenheimer. The number involved is only 575, which is much too small to offer to shareholders, and it is probable that they will be retained by the group.

The report and accounts were adopted.

NEW ERA CONSOLIDATED.

Improvement Expected.

Interests Reviewed.

Mr. [illegible] presided at the annual meeting of the New Era Consolidated on May 29, and in the course of his speech said:

At our last annual general meeting I ventured to express feelings of optimism which, I am afraid, have not altogether been justified by the results of the year's operations. The grave industrial unrest all over the world, of which we in South Africa have, unfortunately, had a generous share, adversely affected business, and our hopes that the reduced price of stores and the somewhat greater efficiency on the mines would result in increased dividends and activity in our markets have not been realised. The markets showed little activity during the year, and only in a few cases were dividends increased. The amount of £25,933, carried to the appropriation account as profit for the year is, however, within £6,000 of the amount carried down in 1920, and under the prevailing circumstances must be considered satisfactory.

Shareholdings Reviewed.

The total book value of the company's shareholdings show a fall as compared with last year of £7,600. Our holding in Springs Mines, Ltd., was increased by 1,208 shares taken up under our sub-participation in the agreement for financing that company, and there still remain to be taken up 3,485 shares at £3 per share, as and when required by Springs Mines, Ltd., to meet capital expenditure, or at the option of your company. Further calls amounting to 8s. per share were made on our holding of 12,500 shares in West Springs, Ltd., making these shares 16s. paid up.

On the other hand, our holdings of New Modderfontein, Modder Deep and Anglo American Corporation shares each show a decrease of 2,000 shares, and we have also disposed of 1,400 shares in Springs Mines and 5,000 shares in Brakpan Mines. At December 31 last, the value of the total shareholding of the company stood in the books at £103,934, while the market value at the same date was £124,153, and to-day's value of the same shares is £147,532.

The only other item calling for comment is that of loans, £29,155. Of this amount, £22,500 represents our 5 per cent. participation in the loan of £450,000 to Daggafontein Mines, Ltd. The Daggafontein Mines had expended practically the whole amount of the loan by the end of the first quarter of last year, and as it was impossible to raise further funds at that time, all mining operations were suspended. For the present, therefore, the loan must be looked upon as in the nature of a lock-up, but it is anticipated that as soon as a favourable opportunity presents itself, additional funds will be provided and then, no doubt, the loan will be redeemed.

Profit and Loss Account.

Turning to the profit and loss and the appropriation accounts, it will be noticed that expenses as a whole are practically the same as last year. On the credit side we find that, as compared with last year, dividends received and receivable have decreased by £7,451. The reduction is partly due, of course, to the smaller holding, but also, to some extent, to the decreased dividends declared on certain of our investments. The Brakpan Mines dividends amounted to 30 per cent. as against 45 per cent. in 1920, and this accounts for a considerable proportion of the decrease. Notwithstanding the drop in the gold premium, Brakpan Mines had a very satisfactory year, the profits being only £55,000 lower than in 1920, which was more than accounted for by the fall in the gold premium. The directors of that company, however, following a conservative and no doubt sound policy, appropriated from profits large sums for capital expenditure on their lease area, the benefit from which should be felt in future years.

Cash Position.

In view of the cash position of the company, arising from over investment, the directors took the opportunity of a favourable market to realise a portion of our holdings, details of which I have already given you, the net profit accruing from the sales being £13,607.

The total profit for the year amounted to £25,934, to which must be added £13,386, the unappropriated profit brought forward from 1920, making a total of £39,320. Having regard to the fact that the book value of our share and cash assets totalled some £133,000, whereas our total share capital is only £100,000, the directors decided to carry £20,000 of the available profit to a reserve account. This reserve is not earmarked for any special purpose, and it will serve as an insurance against the recognised risks of our business, such as possible depreciation in market value of our holdings. This left a balance of £19,320, of which £472 was appropriated for Government taxes, and £10,000 for the payment of dividend No. 13 of 10 per cent., leaving an unappropriated balance of £8,847 to be carried forward to 1921. That, gentlemen, concludes my remarks on our activities for the past year. As to what we can look forward to in the present year it is hard to say. As you are aware, a general strike culminating in a revolutionary movement, covered practically the first three months of the year, and in respect of that period, as was to be expected, several of the companies in which we are interested showed losses. This will undoubtedly affect our revenue for the first six months of the year. I feel convinced, however, always bearing in mind the fluctuations in the gold premium, that as soon as normal conditions are restored the results will show a considerable improvement, but it is not anticipated that your company's revenue from dividends will be equal to that of last year.

Ex-Enemy Shares.

During the past few days negotiations for the purchase of the ex-enemy shares in the company were brought to a successful conclusion. There are approximately 28,000 shares involved, and the purchase price is 5s. 6d. per share. It has not yet been decided how the shares will be dealt with, but I anticipate that they will be offered to shareholders at the purchase price, pro rata to their existing holdings. The total purchase is guaranteed by the Group, who will receive a commission of 5 per cent. on the transaction. The annual meetings of Brakpan Mines, Springs Mines, Daggafontein Mines and West Springs, have been held to-day, and the meeting of the Anglo-American Corporation will be held on the 3rd of next month. Any shareholder can obtain a copy of the report of the proceedings of those meetings by applying to the secretaries.

I now beg to move that the annual report and accounts for the year ended 31st December, 1921, be adopted as submitted.

The annual report and accounts were unanimously adopted.

RAND SELECTION CORPORATION.

Mr. F. R. Lynch presided at the annual meeting of the Rand Selection Corporation on May 29, and in the course of his speech said:—

The annual report and accounts which are presented to you to-day appear in different form to those of previous years. You will notice that the amount standing to the debit of property account has been reduced to £7,816 as compared with £419,202 at the end of the previous year. Your corporation, as the freehold owner of the farms Weltevreden and Rietfontein, sold its interest in the mynpachten of those farms to Brakpan Mines and Springs Mines respectively, on the formation of those companies, for which it received fully paid shares by way of consideration. These shares were retained in the property account, but were not valued, and simply took the place of the mynpachten sold. Your directors have deemed it advisable that the shares should be valued, the property account duly credited, and the holdings included under the heading of "shares and interests in other concerns." Although the valuations were made on a very conservative basis, they amounted to a figure which exceeds the valuation of the balance of the property assets by £65,000, and that sum has been placed to reserve account. The amount standing to the debit of shares and interests in other concerns has, in consequence of these adjustments, been increased from £244,617 to £761,352.

No New Business.

No new business was entered into during the past year, and our interests in other concerns have only been increased by the carrying out of obligations previously undertaken. In this connection I should like to mention the Daggafontein loan. Our corporation, as you are aware, was interested in the reconstruction of the Daggafontein Company, and undertook to assist in providing additional funds if they should be required. In order to complete its development programme it became necessary for Daggafontein Mines to borrow altogether £450,000, and this corporation's proportion of that loan amounted to £61,750. It is anticipated that as soon as a favourable opportunity presents itself additional funds will be provided to reopen the mine, and then no doubt this loan will be redeemed.

Financial Position.

If you will now turn to the profit and loss account attached to the annual report you will see that the revenue for the year is some £42,000 less than for 1920. The amounts received from dividends, township receipts, and interest and commission all show a considerable reduction, but against this the profit on shares realised is increased by £23,000. On the other side of the account our expenses have been reduced from £14,500 to £7,176. Owing to the restricted scale of the corporation's operations, not only salaries but also directors' remuneration have been considerably reduced, and these economies to some extent counterbalanced the reduction in revenue. The balance of profit for the year was £159,282, which, together with the amount of £52,776 carried forward from the previous year, made a total available profit of £212,059. Of this sum taxation absorbed £1,498, dividends £165,000, and the balance of £45,561 was carried forward to the current year. The dividend declaration, equal to 27½ per cent., is the same as that for the previous year, but in order to make this distribution the carry forward from 1920 was drawn upon to the extent of £7,200.

The mining companies in which this corporation is interested held their annual meetings earlier to-day, and the results of their operations during 1921 were dealt with at length. Brakpan Mines and Springs Mines are both making very satisfactory progress. Their dividend prospects for 1922 are adversely affected by the strike during the first quarter of the year, but the opening up of the properties is now being rapidly pushed ahead, and excellent results are being obtained. West Springs is still in the developing stage. The connection between Springs Mines and West Springs No. 1 shaft has been made, and it is hoped that the good values recently disclosed will be continued as development proceeds. All operations on Daggafontein Mines are still suspended, as it has not been found possible to raise additional funds to enable work to be resumed.

Real Estate.

During the year, owing to the general conditions of financial stringency, there was considerable depression in the real estate market, and consequently there was some falling off in the demand for stands in Brakpan and Springs townships. The closing down of Daggafontein Mines also had a depressing effect upon the local property market. Stands to the value of £10,127 were sold during the year, and the collections on account of stands sold under the instalment system amounted to £20,587. As conditions improve there should be a revival in the demand for stands, and I hope it will be possible next year to report better results. The corporation's tree plantations have been extensively added to during the year, and continue to make excellent progress. The recent industrial upheaval, which resulted in heavy loss to the gold mining industry, must seriously affect this year's dividend prospects, as I have said, but it is hoped that its ultimate effect will be good. I trust also that the unrest which has been experienced in mining circles for some considerable time, to the detriment of the industry, will now entirely disappear. If both sides act reasonably and sympathetically there is no reason why the trouble should ever recur, and we can then look forward to the future with every confidence. During tht past few days negotiations for the purchase of the balance of the ex-enemy shares were brought to a successful issue by Sir Ernest Oppenheimer. There are approximately 18,000 shares involved, and the purchase price is 38s. 6d. per share. It has not yet been decided how the shares will be dealt with.

I now beg to move that the report and accounts for the year ended 31st December, 1921, as submitted, be adopted.

The annual report and accounts were adopted.

SPRINGS MINES.

Further Increase in Crushing Plant.

Very Satisfactory Development.

Mr. F. R. Lynch presided at the annual meeting of the Springs Mines on May 29, and in the course of his speech said:—

I have to express my regret that owing to the unfortunate happenings in the first quarter of this year it was impossible to issue the annual reports and accounts as early as usual, but trust nevertheless that you have had sufficient time to make yourselves fully acquainted with their contents.

Under the provisions of the lease agreement the Consolidated Mines Selection Company was called upon during the year to take up 60,000 ordinary shares in the capital of your company at £3 per share, and the issued capital was thereby increased to £1,327,236. Of the 60,000 shares called up, the proceeds of 57,000 shares were applied to shaft sinking and equipment, and the balance to the redemption of the debenture debt. There still remain 172,764 shares of a nominal value of 20s. each to be taken up on terms of the lease agreement at £3 per share. As is pointed out in the directors' report, debentures to the nominal value of £11,135 were purchased, and these, together with surplus purchases from the previous year, exceeded the amount required to fulfil the obligation under the debenture trust deed to redeem £17,110 debentures during the year. No drawing of debentures therefore took place. The amount of debentures outstanding at the end of the year was £86,915.

Stores and Materials.

[illegible] £[illegible] At [illegible] the general stores and [illegible] were valued at [illegible] during 1921 [illegible] which were [illegible] Consumption [illegible] £54,666 to [illegible] quisites for the equipment of the No. 3 [illegible] figure. These [illegible] will be charged out [illegible] Every endeavour is [illegible] the amount invested in stores to the lowest reasonable figure. [illegible] the amount of £25,000 capitalised when the mine commenced crushing will prove inadequate, owing to the gradual extension of our operations.

Financial Position.

The [illegible] for the year, [illegible] amounted to £[illegible] [illegible] the profit for the previous year. The revenue per ton milled was 37s. 2.5d. against 37s. [illegible] working costs show a welcome reduction from [illegible] the fall [illegible] by the reduction in costs. The reduced price realised for our gold is solely responsible for the fall in the profit. The amount credited to appropriation account, [illegible] brought forward [illegible] £[illegible], which sum was dealt with as follows:—T[illegible] £[illegible], Government participation in profits £15,641, development [illegible] £127,239, and dividend [illegible] 7½ per cent. [illegible] £197,5[illegible]. This leaves £[illegible] carried forward to the [illegible] I am pleased to say that the Provincial Gold Tax was repealed during the year, and that the Provincial Government no longer has the power to [illegible] At previous [illegible] meetings [illegible] has [illegible] appropriated for development suspense. It is considered that an extensive development programme should be maintained, in order that the ore reserve may be increased [illegible] justify a further increase in the crushing capacity of the plant. This work cannot be accomplished without the expenditure of a large sum of money. Last year £248,426 was spent on development. Of [illegible] £121,1[illegible]7 was provided by a fixed [illegible] per ton milled, and the balance was appropriated from profits. Of course, it might be argued that charges of this nature should be met from capital funds, but your directors, having in mind the cost of sinking the No. 4 shaft, the development of the area contiguous to the shaft, and prospec[illegible] of the company to appropriate the necessary sum out of profits [illegible]

Increased Tonnage.

At our last annual general meeting I referred to the improvement in the ore breaking and transport facilities. I am [illegible] facilities were further improved during 1921, with the result that the tonnage crushed increased from [illegible] to 484,750 tons, or an increase of some 19,000 tons. The improvement would have been considerably greater but for a [illegible] strike of the [illegible] during April and September [illegible] rock breaker at the No. 2 shaft. The tonnage broken in the mine during 1921 amounted to [illegible] of this 20[illegible] tons of low grade development and waste rock, equal to 29.8 per cent. was either discarded at the surface or packed underground. Improved transport facilities permitted the separate sorting and rejection on the surface of 84,049 tons of this low grade development and waste rock as compared with 54,093 tons during the previous year. Development was pushed forward with all despatch during the period under review, as is shown by the fact that the total footage accomplished amounted to 22,[illegible] feet, which is an increase of [illegible] feet over the previous year. Of this footage 16,221 feet were on reef and 16,0[illegible] feet were sampled, the average value being 23.54dwt. over 17.25in. The payable footage totalled 8,630 feet, equal to 53.8 per cent. of the footage sampled, giving an average value of 30.74 dwts. over 22.10 inches, or 679 inch dwts. This result is the highest obtained since crushing was started.

Development Reviewed.

During recent years we have done a great amount of development work, and the footage accomplished during 1921 is the highest on record. The scheme of parallel haulages near the east and west boundaries has been completed, and we are now in a position to develop the outlying districts of the mine with a minimum of cost and effort. We have linked up the eastern section of the mine with No. 3 shaft and pushed out a haulage level from this shaft towards the western section. A great deal of this work has been off-reef and it will be clear that this development, which was of a primary nature, had to be carried out irrespective of the values encountered. When this skeleton work was completed it would be left to secondary development to follow up the indications of payable ore previously disclosed. We hope, therefore, that the heavy expenditure on primary development work which has been incurred during the past few years will not be a constantly recurring charge, and that we shall have periods during which we shall be able to add considerably to our ore reserve at a relatively small cost. The recalculation of the ore reserve at the end of the year showed an increase for the year of 330,053 tons, the total reserve being 3,056,231 tons, assaying 8.92dwt. over 61.54 inches, or 549 inch dwts. As compared with 1920 the value is 0.16 higher and the width 1.94in. narrower, but the inch dwt. figure remains practically the same. In certain sections of the mine areas of considerable promise were opened up. I would specially refer to the eastern section off the east haulage, where a shoot was encountered containing 674,000 tons as far as it has been opened up averaging 10.77dwt. over 60.12in. The limits of the shoot have not been reached, and there is a good prospect that this year's operations will result in a considerable additional tonnage of payable ore being added to the reserve from this ore body. Generally speaking, I may say that the development results for the past year were excellent, and there is every promise that the results for the present year will be equally satisfactory.

The Broad Scheme.

Before leaving the subject of development I would like to call your attention to the broad scheme which has been pursued in the opening up of the property. If you will refer for a moment to the plan attached to the annual report, you will see that the No. 1 shaft is connected on the eastern side, by way of haulage to the No. 2 and No. 3 shafts, a distance of 13,000 feet, whilst on the west side the No. 1 shaft is connected with not only the No. 2 shaft but also with the incline between the No. 2 and No. 3 shafts. The opening up of the workings in this manner not only makes for excellent ventilation and efficient transport, but also permits of the development of the virgin areas with despatch. In fact, the development footage is restricted only by financial considerations. The No. 3 shaft will be fully equipped and ready for use at an early date, and it will then be possible to relieve the pressure that has from time to time been experienced at the No. 1 and No. 2 shafts. Another advantage expected to accrue from the No. 3 shaft is that costs should be beneficially affected, because the rock broken from the lower section of the mine will be hauled through this shaft, instead of having to be transported very long distances underground to either No. 1 or No. 2 shafts. Little development has been accomplished around the No. 3 shaft, but two payable stretches have been encountered, the one assaying 10dwt. over 62in. for 255ft. and the other 5.4dwt. over 55in. for 245ft. In the latter case the shoot has not yet been traversed. Sinking operations at the No. 4 shaft have been suspended for the time being. Our chief reason for coming to this decision was the excellent development position of the mine, but a further reason is the expectation that, with the present downward tendency of costs, it will be possible to complete the work later on at a lower price.

Augmented Reduction Plant.

The continuance of the very satisfactory development of the mine led your directors to the conclusion that they were justified in extending the reduction plant so as to increase its capacity by approximately 10,000 tons per month for a considerable period, as you know, experiments have been conducted with the object of determining whether it would be more economical to comminute ore from the mine by means of crushers and tube mills only and to eliminate stamps. The favourable results obtained from these investigations made it possible for us to carry the experiments a stage further and endeavour to prove the economic possibility of an "all-sliming" process, followed by direct cyaniding, which would offer several advantages over the old process. The experiments were started by way of a test on a small scale at Brakpan Mines, and when the results proved satisfactory further tests on a more extensive scale were carried out at Springs Mines. I am pleased to say that, in the opinion of your technical staff, the experiments have proved an unqualified success. Mr. Carl Davis, our consulting engineer, Mr. Ewing, consulting mechanical engineer, and Mr. Willey, consulting metallurgist, conducted the investigations, while Messrs. W. B. Paterson and E. D. Rex and the officials of Springs Mines, were especially helpful in the experimental work. The satisfactory results obtained call for every praise and congratulation. One great feature of the "all-sliming" process is the elimination of the amalgamation plates and any chance of losing gold from that source will be avoided. It has been established that under the new process our extraction has been increased by 0.133dwt., which on the tonnage treated last year would be equivalent to an additional recovery of 3,257oz. of fine gold. Then, as regards the capital cost of the plant required under the "all-sliming" process, our technical staff estimate that the installation of the new type of plant will result in a saving of approximately 30 per cent. as compared with the cost of plant of similar capacity designed for the standard processes of stamps, plate amalgamation, and sands and slimes treatment in the cyanide plant. Needless to say, the extension of our reduction plant from 40,000 to 50,000 tons per month will be made in conformity with the "all-sliming" process which has been so successfully developed, and it is hoped that the work will be completed by the end of June, by which time we anticipate that the native labour strength will be equal to our requirements.

The Strike.

Unfortunately work in the early months of this year was seriously impeded by the strike. It was confidently anticipated that under normal circumstances the increase in the reduction plant would have been completed and in operation before now, and that No. 3 shaft would have been fully equipped, but owing to the strike the completion of this work will not be effected before about the end of June.

I do not propose to discuss the events which led up to the strike, or the various phases through which it passed, but I cannot let this opportunity pass without saying that, in my view, the mining industry has invariably endeavoured to treat its employes in a fair and reasonable manner. The wages paid are higher than those in any other part of the world for similar classes of work, and everything possible is done in the way of providing recreation halls, sports grounds, golf courses, tennis courts, etc., at a big expenditure of money in order that employes may enjoy many of the amenities of life during their leisure hours. But notwithstanding all this, strikes have been called, the employes have ceased work, and the industry has been brought to a standstill generally for insufficient cause, or to satisfy the lust for power of labour leaders who do not fully understand the conditions of the industry, and are not in sympathy with it. Many of the men, I am sure, had no desire to strike, but their hands were forced by the irresponsible action of extremists, and both employer and employe suffer grievous injury. In pre-war days the management of a mine was in the hands of the manager under the direction of the chairman and board of directors of the company, but of late years that practice has not been maintained. An endeavour is now being made to re-establish the position, and to give the manager the same control of his mine affairs that he exercised in the past. It is hoped by this means to re-establish a feeling of personal interest in the employes on the part of the directors and management, and at the same time to dispel the feeling of suspicion that has for some years past permeated the employes, so that after all good may come out of the evil through which we have passed.

Mr. Coaton, our general manager, and his officials had a most trying and anxious time during the strike, particularly during the period from March 10 to 14, and it is only through their excellent precautions for safety that a very different picture might not have been presented to you to-day. Our sincere thanks are due to all the officials for their very loyal services, and especially to Mr. Coaton, Mr. Roxburgh, the underground manager, Mr. Scott, the resident engineer, and Mr. Granger, the compound manager, the last named having maintained splendid discipline and control over the mine natives during the strike period.

It is provided in the mineral lease that for a period of five years from the beginning of 1918 the ore reserve of the mine shall be calculated half-yearly, and for the past four years the new figures have been published as at the end of June and December. After consultation with the Government Mining Engineer, it has been decided that in view of the small amount of development work done in the earlier months of this year, there is no need to go to the trouble and expense of recalculating the reserve as at June 30 next. Consequently, we shall now revert to the practice of recalculating the ore reserve only once a year, at the end of December, and there will be no further publications of the figures as at the end of June.

The Future.

It is usual, at the annual general meeting, for the chairman to give some forecast as to the possibilities for the year, based on operations for the first few months. Well, that is out of the question to-day. I can only say we hope very shortly to obtain a full complement of native labour, to have our increased plant in operation, and then gradually to increase our tonnage to its maximum figure. It is gratifying, however, to be in a position to tell you that the good development to which I have referred is continuing.

In view of these disclosures, and the very promising outlook for the future, your directors have quite recently had under consideration the question of still further increasing the capacity of the reduction plant. It has now been decided that—with an ore reserve of over 3,000,000 tons of highly payable rock and the excellent results being obtained from development—they are fully justified in proceeding immediately with plans for further additional plant, so that the nominal crushing capacity will be increased to 60,000 tons monthly. Thanks to the introduction of the "all-sliming" process, the capital expenditure, as I have already stated, will be considerably less than it would have been for the installation of "standard" plant of equal capacity. Shareholders will realise that the increase in monthly tonnage will not take place at once, because some little time must elapse before the progressive increase of tonnage from the mine will be adequate to fully supply the capacity of the existing plant, but during that period advantage will be taken of the opportunity to proceed with the designing of the proposed additional equipment. Your directors feel that the present position of the mine can only inspire them with optimism as to the future, and should their expectations be realised the improvement in the ore reserve position will be such as to fully warrant the increase in the capacity of the reduction plant. We therefore consider it preferable to be, perhaps, a little premature in the erection of the further plant rather than at a later date to find ourselves in a position to supply additional tonnage to the mill and not have the necessary plant to deal with it.

Ex-Enemy Shares.

During the past few days negotiations for the purchase of the ex-enemy shares in the company have been brought to a successful issue by Sir Ernest Oppenheimer. There are approximately 70,000 shares involved, and the purchase price is 39s. per share. It has not yet been decided how the shares will be dealt with, but I anticipate that shareholders will have the right to apply for their pro rata, and I hope it may be possible to persuade the large holders, such as the Consolidated Mines Selection Company and the Rand Selection Corporation, to waive a portion of their rights for the benefit of shareholders. There were also approximately £34,000 Springs Mines Debentures purchased, the price being £90 per cent. These will be offered to this company at cost price, and it is proposed to cancel them. The total purchase is guaranteed by the group, who will receive a commission of 5 per cent. on the purchase price.

I deeply regret to record the death, since we last met, of two of your directors, Messrs. Charles Marx and M. McCormack. I am sure you will desire me to express your appreciation of the services these gentlemen rendered to the company, and to convey a message of sympathy to their families.

The report and accounts were unanimously adopted.

* * *

WEST SPRINGS, LTD.

Favourable Development Results.

Position Reviewed.

Mr. [illegible] presided at the annual meeting of Springs Mines, Ltd., on May 29, and in the course of his speech said:—

In [illegible] at West Springs, there is very little for me to add to what has already been made known to you by means of the annual and quarterly reports. The opening up of the mining area has been carried on as rapidly as circumstances permitted. The No. 1 Shaft intersected the reef on March 24th of last year, at the depth of 3,890 feet, and was continued to its final depth of 4,105 feet. After the station and station roadways were completed, work was concentrated on the east haulage in order to connect with the haulage being driven from Springs Mines. This was a big piece of work, and it was only in the early part of this year that the connection was made. The values at the point where the reef was intersected in the shaft were poor, but the width was very encouraging. At the end of the year the haulages had not got through the poor zone indicated by the low values encountered in the shaft. The development work so far carried on in West Springs has been by way of main haulage, and is of a primary nature. In driving these haulages it was necessary to avoid gradients which would cause difficulty and extra expense in the future working of the mine, rather than to follow the reef along its course through the property. Reef exposures at times had to be sacrificed, and the limited results so far obtained cannot in any way be taken as indicating the value of the property. The total footage driven was 4,569 feet, of which only 1,951 feet were on reef, and as you will see from the manager's report, this was made up of footages in five different haulage ways. In one case, out of 850 feet driven only 40 feet were on reef. Of the total footage on reef, 1,885 feet were sampled, giving an average assay value of 4.6 dwts. over 22.9 inches. In addition, Springs Mines did over 3,000 feet of development work in your property. The combined results gave a development footage of 7,660 feet for the year, of which 3,000 feet was sampled averaging 7.41 dwts. over 23.51 inches.

These results are somewhat disappointing, but with our large experience of the Far East Rand, we realise that the situation of deposits of payable ore is not determined by the artificial demarcation of boundary lines, and as in Springs Mines excellent values have been disclosed in the areas adjoining our boundary, it may safely be assumed that the shoots will continue into our property. It is, of course, only by further development that their values will be disclosed. As is pointed out by your consulting engineer, some headings were being advanced in ore of satisfactory value, when minor faults were encountered, and now that the main haulage is completed, further development is being undertaken in order to pick up the reef and prove its value. When the No. 2 Shaft had reached a depth of 2,940 feet, it became evident that the reef was at a greater depth than was at first expected. The sinking of the shaft was, therefore, suspended and an exploratory borehole put down. From the information thus obtained, we came to the conclusion that the reef would be intersected at a depth of about 4,800 feet, and that the shaft [illegible]

[illegible] the No. 2 Shaft and to concentrate all [illegible] was considered that this work would be [illegible] No. 2 Shaft. Of course, the knowledge [illegible] important factor and made this decision possible. The number of development [illegible] ing North Haulage, N.E. Diagonal Haulage, 8 East Haulage, N.E. Haulage Levels 1 and 2. Haulage Raise, and East Haulage Raise, so you will see that every [illegible]

The working agreement entered into with Springs Mines, Ltd., in 1918, has been of very great value in the development of your property, and I am glad to [illegible] have been successfully concluded. All development work, except in the 8th East Haulage, which is an unconnected heading from Springs Mines, will be carried on by West Springs through our No. 1 Shaft, and it is anticipated that with the better facilities now available an improvement will be effected both as to speed and cost of operations. During the past year, in order to meet expenditure, calls amounting to 8s. per share were made on the partly paid shares in the company, and in addition 5,470 partly paid shares were made fully paid. The authorised capital of the company is £1,400,000, and there is an amount of, roughly, £190,000 still to be called on the partly paid shares. The details of expenditure are clearly set forth in the balance sheet and call for no comment from me.

Mining operations were suspended during the first three months of this year owing to the strike. After such plant as would have been damaged by water was withdrawn, the water was allowed to accumulate in the No. 1 section of the mine. Pumping was continued throughout at No. 2 Shaft, in order to provide the water required for the plant and the Native Compound. At the termination of the strike, no damage having been done to the property, operations were speedily resumed. I am pleased to say that the results of the development work since then have been very favourable, and during the current month the following values have been disclosed:—

1. South-West Haulage Raise, 26.2 dwts. over 27.3 inches for 60 feet sampled. 2. North-East Haulage, No. 1 Drive, 37.4 dwts. over 14.1 inches, for 55 feet sampled. 3. North-East Haulage, No. 2 Drive, 30.1 dwts. over 14.3 inches, for 60 feet sampled. 4. East Haulage Raise, 11.8 dwts. over 26.5 inches, for 85 feet sampled. The North-East Diagonal Haulage encountered a stretch of 240 feet of payable ore assaying 10.9 dwts. over 36 inches. The values then fell off for a short distance, but the heading has now again entered payable ore. I may add that the 8 East Haulage is still off reef, but is expected to cut it very shortly. This face is being advanced in close proximity to the extension of a shoot of considerable magnitude, and it is therefore not unreasonable to anticipate good results here before long.

During the past few days negotiations for the purchase of the ex-enemy shares in the company were brought to a successful issue by Sir Ernest Oppenheimer. The number of shares involved is only 5,500, which is too small a number to offer to shareholders, and it is probable that they will be retained by the group. Since the end of the year, Mr. H. W. Pridgeon, who was manager of your mine practically from its inception, resigned his position, and Mr. B. D. Bushell, the late manager of Daggafontein Mines, Ltd., has been appointed in his place. We desire to place on record our keen sense of appreciation of the loyal and distinguished services rendered by Mr. Pridgeon, both to this company and to the group. He intended to go to his home in New Zealand on a long vacation, which it was hoped would restore him to good health, but unfortunately before he could take his well-earned holiday, his health broke down entirely, and he passed away in April. We deplore his untimely death, and respectfully offer our sincere sympathy to his bereaved wife and family.

The report and accounts were adopted.

* * *

THE UNION CORPORATION'S REPORT.

Increase in Reduction Plant's Capacity.

Mr. P. M. Anderson, who presided at the annual meeting of the Union Corporation, Ltd., yesterday, said:—Our gross profit for the year amounted to £280,361, being an improvement on last year of £26,052. We have considered it desirable, however, to write off £41,250 from sundry debtors, but, owing to lower exploration and general expenses, our net profit at £179,517 works out at only £10,557 less than last year. Bringing in £68,355 brought forward from last year, we have £247,872 to dispose of, being within a few hundred pounds of last year's figure. We have added £30,000 to reserve account, bringing it up to £150,000, and we have declared and distributed a dividend of 2s. per share, the same as last year, leaving a balance of £77,872 to carry forward to this year. I think it may fairly be claimed that, in view of the many difficulties attending finance business during the past year, the figures which have been put before you are indeed satisfacory. Turning to the balance sheet, you will observe that sundry creditors and credit balances amounted to £1,077,893 at the end of last year. This item has been, in the meantime, very materially reduced. At the same time you will notice that our liquid assets, in the form of temporary advances against securities, British and Union Government securities, and cash amounted to no less than £881,323, or to about 82 per cent. of the amount due to sundry creditors. This leaves out of account the asset of sundry debtors, which has been heavily written down in the past. There has been little change in our share and debenture holdings, suitable opportunities to enter into new ventures on the one hand and a desire to realise on the other not having arisen.

Transvaal Interests.

Our principal interests continue to be centred in gold mining on the Rand, where important changes for the better have recently taken place in economic conditions. It is common knowledge that during the war period the European employes on the mines built up very strong labour unions, which imposed restrictive conditions on the industry, resulting in high working costs. The fall in the selling price of gold compelled those responsible for the administration of the mines to take up the matter very seriously with the labour unions. Unfortunately, the representatives of labour could not or would not see either the necessity or the reasonableness of the employers' request for reorganisation, and a strike was declared on January 10 of this year. The subsequent events, culminating in an attempted revolution, which was suppressed by March 17 are fresh in your memory, and I need not recapitulate them. This protracted strike was a costly matter for the mines, but has resulted in re-establishing conditions, including the functions of management, which should have far-reaching effects on the cost of production and assure the prosperity of the industry. Further, the steady fall in the cost of living has made it possible to reduce the cost of living allowances paid to employes. It is intended that these allowances shall disappear entirely after June 30 next. It may, therefore, confidently be expected that working costs will be sufficiently reduced to offset the inevitable return of gold to its standard price in sterling.

Modderfontein Deep Levels, Ltd.—During the past year the Modder Deep established records in the yield of gold per ton milled, in the total profit, and in its ore reserve position. The tonnage milled was 509,300 tons, the yield per ton was 11.009 dwts., the gross profit £932,394, and the working costs 22s. per ton milled. Taxation absorbed £161,299, and £750,000, or 150 per cent. on the capital of the company, was distributed in dividends. The unappropriated balance carried forward to this year was £179,456, or some £16,000 more than at the close of the preceding year. The development footage accomplished was slightly larger than in 1920, and exposed equally satisfactory values. The ore reserves were increased by 270,000 tons to 4,375,000 tons, having a value of 9.3 dwts. over a stoping width of 77 inches.

Lower Working Costs.

Operations during the current year were seriously interfered with by the strike; nevertheless, the company was able to make a profit of £52,874 during the first quarter. The profit for April was £53,959, in spite of the rock hoist being out of commission all the month owing to a breakdown. This result was made possible by the fact that the company has a large reserve of broken ore on the surface. Satisfactory repairs to the engine were completed by the 15th of this month, since when normal operations in both mining and development have proceeded uninterruptedly. The working costs for April were nearly 2s. per ton lower than the average for last year.

Geduld Proprietary Mines, Ltd.—At the Geduld Mine the gold produced was slightly greater and the working costs less than in the preceding year, but the gross profit of £386,128 was less by about £19,000 on account of the lower average selling price of gold, which fell from 110s. in 1920 to 105s. 9d. last year. Of the total profit accruing to the company, £47,285 was absorbed by taxation, £32,552 was expended on excess development, and £220,916 was distributed in dividends. The unappropriated balance carried forward to this year was £129,468, or some £74,000 more than at the close of the preceding year. Development continued to show very satisfactory values, particularly in the southern area of the mine. The result is that the ore reserves at the end of the year amounted to 3,545,000 tons, valued at 8.1 dwts. over a stoping width of 62 inches, which figures disclose increases over those of the year before of 325,000 tons, .1 dwt. in value, and 1 inch in width.

During the first three months of the current year conditions were quite abnormal owing to the strike, and a working loss of £21,100 was registered. During April conditions became more normal and a working profit of £27,014 was earned. A satisfactory feature of the month's working was that working costs were 20s. 9d. per ton milled, compared with 23s. 7d. for the year 1921.

Improved Ore Reserves.

In view of the improved ore reserve position and the favourable prospect of developing further high-grade ore, the company has decided to increase, as soon as possible, the capacity of its reduction plant by about 50 per cent., so as to treat 65,000 tons per month. The anticipated reduction in costs resulting from the improved industrial position and from operating on a larger scale will bring within the scope of profitable working a large tonnage of low-grade ore developed within recent years, but not yet included in the ore reserves. The consulting engineer estimates this additional ore at 2½ million tons. As nearly all of the 180,000 shares which were under option until December 31 last at 10s. per share were taken up, the company is well supplied with funds.

Princess Estate and G.M. Co., Ltd.—Since the issue of the report the Princess Estate Company has been placed in voluntary liquidation, and a first distribution of 1s. 2d. per share has been declared. The further amount likely to be distributed depends upon the sum which may ultimately be realised by the sale of claims still held and of the freehold portion of the company's property, steps to obtain deproclamation of which are in hand.

You will have become aware through the announcements in the Press that the Geduld and Modder Deep companies have recently concluded agreements with the Union Custodian of Enemy Property to purchase from him at 50s. and 40s. per share respectively the remaining ex-enemy shares in these companies. These shares are being offered to shareholders of the respective companies at the purchase prices under the guarantee of your corporation to take up, at the same prices, any of the shares not taken up by shareholders. For this guarantee your corporation receives a commission of 5 per cent. on the total amount of the purchase prices.

Interests in Mexico.

La Fe.—According to last advices the mill of the La Fe Mining Company, Limited, should now be operating at full capacity. At the outset, in February last, there were troubles with tube-mill bearings and other minor mechanical difficulties inseparable from the starting up of new plants. The grade of ore milled is up to expectations, as also the extraction, while the manager of the property (Mr. E. A. Strout) is optimistic in regard to operating costs. We consequently anticipate fair surpluses, which can be applied in reduction of our advances to the company.

San Francisco Mines of Mexico.—We retain an important interest, and in fact we have slightly increased our interest, in the San Francisco Mines of Mexico. Operating results since the installation of the new mill, which came into commission in January last have been beset by a series of initial difficulties, and consequently form no measure of what can reasonably be expected in the future, in regard to which all the technical experts connected with the enterprise hold the most encouraging opinions. Estimates have been submitted under which it is expected that the company should earn a considerable profit at the present level of metal prices when development has advanced sufficiently ahead of the mill. Particular attention is being paid to development, and we hope that the period of plant difficulties is over and that milling can now proceed continuously at full capacity. I should mention that the £100,000 we and our associates agreed to advance in 1920 has now been fully called up.

Ojocaliente District.—In the Ojocaliente district we own or control a number of lead-silver claims, on which a fair amount of prospecting has been done. We have, however, stopped work there for the time being, as we are not prepared at this juncture to embark upon a somewhat elaborate development programme involving electric power transmission, railroading, and ultimately the erection of a concentrating and possibly a smelting plant.

General Remarks.

Some shareholders may possibly be disappointed that we do not at present show any activity in launching out into new business. During the course of the year we have studied numerous mining and industrial propositions, all of which we have rejected. Some of these had merits, but, apart from there being a lack of public interest in new enterprises, the burden of financing under dear money conditions, heavy taxation, and high commodity prices and wages affecting all capital expenditure led us to the conclusion that it would be wiser to do nothing. It will be seen, therefore, that our energies have been confined to developing the interests we already possess with a view to increasing their productivity. Though some progress has been made in the readjustment of economic conditions, I am afraid the disorganisation of financial and industrial conditions caused by the Great War and its aftermath has been so great as to make it unreasonable to expect that it can be corrected except by a slow progress of steady and hard work. Before concluding I desire to record the loss which your corporation has sustained by the untimely death in September last of its late Johannesburg manager, Mr. M. McCormack, and to express on behalf of the board of directors their appreciation of the services rendered by him during his brief tenure of office.

You are no doubt aware that the board has done me the honour of appointing me Johannesburg manager. Mr. H. R. Hill, for many years general manager of the Modderfontein Deep, has taken my place as consulting engineer. Mr. Paul Strakosch has been appointed sub-manager in Johannesburg, and Mr. V. J. Ronketti, after an absence of about a year, has resumed his position as secretary. It gives me great pleasure to express the directors' grateful thanks for the loyal services rendered by the management and staff of the corporation in all centres.

The report and accounts were adopted, and the retiring director (Sir Carl Meyer, Bart.) was re-elected.

GEDULD PROPRIETARY MINES, LTD.

Profit of a Thousand a Day.

Strong Development Position.

The New Plant.

The twenty-first ordinary general meeting of shareholders in Geduld Proprietary Mines, Ltd., was held on Friday afternoon, May 26, in the Board Room, Consolidated Building, Fox Street, Johannesburg.

Mr. P. M. Anderson presided. The total shares represented by proxy or personally at the meeting numbered 295,677.

In moving the adoption of the report and accounts for the year ended 31st December, 1921, the chairman said:

Though the past year's operations have been slightly less remunerative than those of the previous year, there is at least some consolation to be derived from the fact that this result is due to circumstances entirely beyond the control of your company. I refer, of course, to the lower so-called "premium" obtained on the gold produced.

Record Tonnage.

The actual operations at the mine have been quite satisfactory, the tonnage treated in the mill being some 11,000 tons in excess of the previous highest, the yield per ton practically the same as in the previous year, and the working costs, at 23s. 7d., about 6½d. per ton lower. The effect of this increased output and lower costs has, however, been insufficient to offset the reduction in revenue due to the lower selling price of gold, with the net result that the working profit of £369,566 is less by about £19,000 than that for 1920.

Sundry receipts from interest, rents, sales of water, owners' share of licences, etc., added £16,562 to the working profit, bringing the total for the year to £386,128. Of this amount, £32,552 was expended on excess development; taxation amounted to £47,280; charitable donations absorbed £2,715; additional remuneration to the directors under the provisions of the articles of association amounted to £1,800; £6,939 was written off as depreciation chiefly to reduce to present-day values some of the stores and materials purchased during the war which are still on hand; and £220,916 was distributed in dividends. The remaining £73,921 was added to the unappropriated balance brought forward from the previous year, increasing this item to £129,467 18s. 6d.

The New Shaft.

On capital account a total of £181,000 was expended during the year, of which £152,468 was in connection with the new No. 7 shaft, the sinking of which was completed during the year. At this shaft, connection has been made with the reef on the 6th and 7th levels, while at the 8th level, where the main ore bin will be located, the crosscut to the reef is well on the way.

Work in connection with the underground layout at this shaft will not be completed until well into next year, but will be sufficiently advanced in three or four months' time to permit of this section of your mine supplying its due quota of ore to the mill via the new surface transport system. In the meantime only 4 per cent. of the ore stoped is coming from this section, which contains 20 per cent. of the ore reserves.

You will have gathered from the reports of the consulting engineer and general manager that the increased development footage accomplished during last year continued to disclose very satisfactory values, particularly in the southern area of the mine. The result is that the ore reserves at the end of the year amounted to 3,545,000 tons, valued at 8.1 dwts. over a stoping width of 62 inches, which figures disclose increases over those of a year ago of 325,000 tons, 0.1 dwt. in value and 1in. in width. I do not propose to review the operations for the first four months of this year, as the conditions have been quite abnormal owing to the strike and attempted revolution on the Rand. What is of vital importance to shareholders is that the mill was idle from January 10 to February 20 and from March 12 to 15. An encouraging feature to which I would draw your attention is the reduction in working costs under the altered industrial conditions since the resumption of operations. The cost of production for last month was 20s. 9d., including the usual charge of 2s. 9d. per ton for development redemption.

Development and Ore Reserves.

The development done this year in the southern area, though small in extent, is maintaining the high promise of previous work. On the sixth level 420 feet of driving has been done, of which 63 per cent. is payable, having an assay value of 19.6 dwts. over a reef channel width of 41 inches. On the seventh level 100 feet of driving has been done, all of which is payable, having an assay value of 30 dwts. over a reef width of 42 inches. In order to bring your information up to date with regard to development in this

[illegible]

[illegible] engineer to recommend, and your board to sanction, an immediate increase in the [illegible] tons per month. If further justification [illegible] of the plant, it will be found in the existence of a large quantity of low-grade ore developed during recent years in the northern portion of the mine. This ore could not be included in the ore reserves when working costs were in the neighbourhood of 24s., but can be treated at a profit when the anticipated reduction in working costs resulting from the improved industrial position and the further reduction due to operating on an enlarged scale become an accomplished fact.

Your consulting engineer estimates that the saving in working costs due to these factors should be between 5s. and 6s. per ton compared with the average costs for 1921, and estimates the quantity of this low-grade ore at 2½ million tons. If this ore be added to the previously published reserve of high-grade ore it would bring the total payable ore now available to 6,000,000 tons having an assay value of 6.6dwt. over 61 inches stope width.

[illegible] average stope value should be sent to [illegible] higher grade ore. It is, however, comforting to know that, in this low grade [illegible]

Extending the Equipment.

The enlarged plant is expected to be in commission in the early part of next year. There will be no radical change in the method of ore treatment. It is, however, intended to crush the ore much finer than we are now doing, resulting in [illegible] value of residues. The cost of the plant will be rather more than a simple addition to treat 25,000 tons per month would have involved as the finer crushing will apply not only to the additional ore but also to the ore treated in the existing plant.

The funds available at the beginning of this year, as disclosed in the balance sheet, are sufficient to cover the capital expenditure programme sanctioned by the board in connection with completing the equipment and underground layout at No. 7 shaft, the surface transport arrangements, the extension of the reduction plant, compound accommodation, etc.

It is probable that the board will find it necessary to sanction further capital expenditure from time to time, but you may rest assured that any future appropriation out of profits to meet such calls will be of a very minor nature, and that the bulk of the profits earned, after making due allowance for the tax collection, will go into the pockets of shareholders.

Before concluding I wish to remind you of the circular issued on the 9th instant, advising you that the balance of the shares formerly held by ex-enemy nationals has been purchased from the Custodian of Enemy Property, and that these shares are being offered to you [illegible] the 30th instant.

It is with a deep sense of loss that your directors record the death of our late chairman, Mr. M. McCormack, and I feel sure you will wish to endorse the expression of sympathy which has been conveyed to his relatives by your board.

I wish to place on record not only the board's high appreciation of the excellent services rendered to your company during the year under review by the staff and employes generally, but also its sense of indebtedness to the officials and others who so ably protected your company's interest during the recent industrial upheaval. You are aware that a very large volume of water has to be pumped daily, and that, when the unions withdrew their men from essential services, the flooding of the mine would have been inevitable had it not been for your officials, who manned the engines and pumps, thereby rendering a great service not only to shareholders but also to the State. I now beg to move:

"That the directors' report and audited statements of account, as laid on the table, be approved and adopted, and that all matters and things undertaken and discharged by the directors on behalf of the company be, and they are, hereby confirmed."

The report and accounts were adopted.

Successful Diamond Issue.

The Diamond Fields of Africa (D.F.A.) Exploring Co., Ltd., has made an issue in London of 300,000 shares at par. The capital of the company is £260,000 divided into 2,080,000 shares of 2s. 6d. each, of which 1,780,000 have been issued and fully paid up. The capital is to be increased to £400,000 in shares of 2s. 6d. each, ranking pari passu with the existing share capital. The company owns the freehold Makganyene Estate and the diamond mine thereon, and holds under Government titles the Postmas No. 1 and Postmas No. 2 mines, situated approximately 120 miles west of Kimberley. It also holds the right to purchase a further 71,000 acres of land in the same district, including the "Bowden" and "Smuts" farms of approximately 7,700 acres, with the two diamond mines thereon. The right to purchase these two farms is secured by the payment of £20 a quarter, the price payable being £6,000. The total cash expended to date on the five mines exceeds £100,000 on plant, development, permanent buildings, etc. A balance of approximately £12,000 is payable to the vendors of the Postmas properties; all moneys subscribed in excess of this amount (after payment of the expenses of this issue) will be available for working capital.

Manufacturers of all Classes
of STEEL WIRE ROPES,
including Flattened
Strand and Lock
Coil.

EXCELSIOR
WIRE ROPE COMPANY, Ltd., CARDIFF.

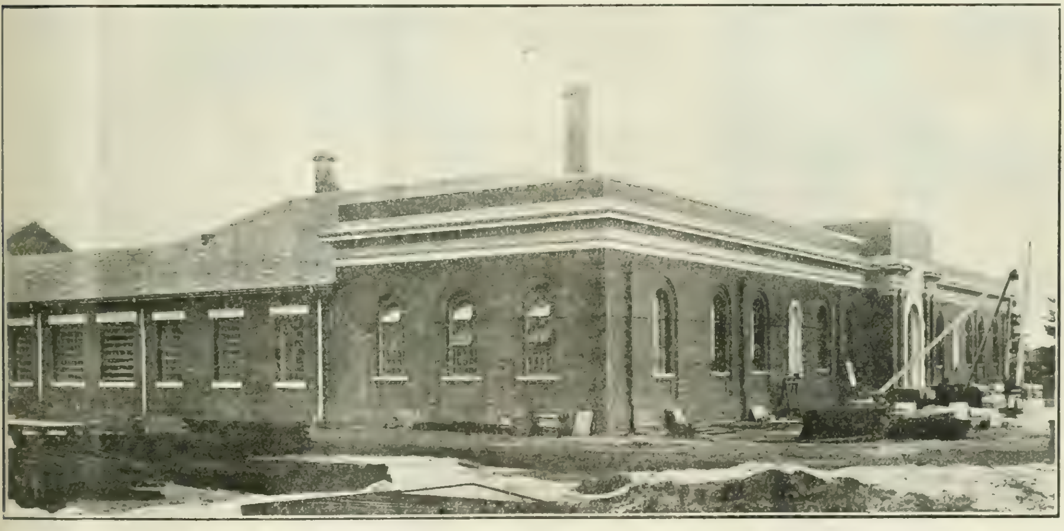
Sole Agents:
FLINT & EPTON,
HOWARD BUILDINGS,
JOHANNESBURG.

Research on Rand Mines—New Mining Legislation—Tanganyika Progress.

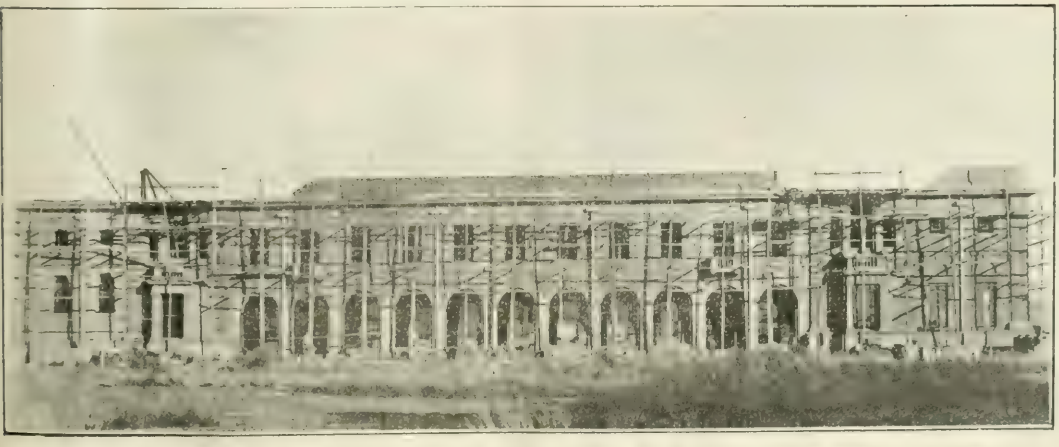
The South African
Mining & Engineering Journal
THE ONLY WEEKLY MINING PAPER IN THE CONTINENT OF AFRICA.
Established 1891.

Vol. XXXIII., Part I. JOHANNESBURG, TRANSVAAL, SATURDAY, JUNE 10, 1922. No. 1602.

The New Mint and the New Rand University.



The Pretoria Mint, which is nearly ready and which will start operations this year.



The main building of the new University of the Witwatersrand, at Milner Park, now nearing completion.

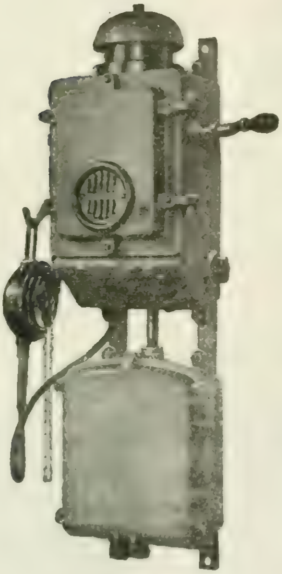
SIEMENS BROTHERS
AND
COMPANY, LIMITED.

MAGNETO MINING TELEPHONES

Hermetically sealed DIAPHRAGM behind extra strong GRID.

Gold plated DIAPHRAGM.

Very strong Dampproof CORD.



Closed.

DEFIES
- Damp
- Dust
- Inflammable Gas
- Rough usage
- Noise

Powerful (1600 Ohm) Watertight SIEMENS BELL.

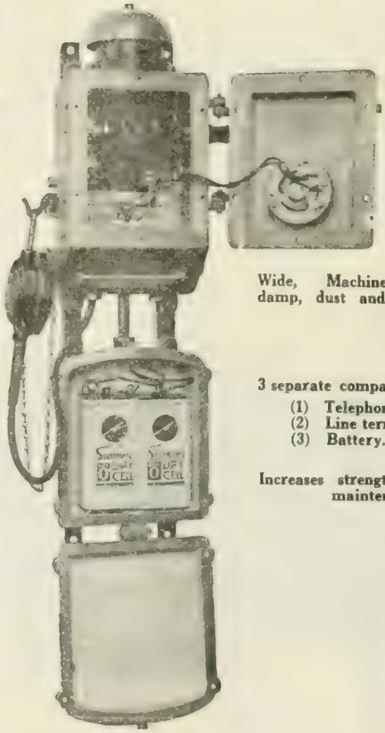
Very powerful hand GENERATOR.

Bare, tinned, copper internal CONNECTIONS.

Loud speaking RECEIVER

CORD specially reinforced here

Highest quality dry-cells.



Open.

Very efficient renewable CAPESULE TRANSMITTER.

Wide, Machine-faced joints damp, dust and flame proof

3 separate compartments for:—
1. **Telephone.**
2. **Line terminals.**
3. **Battery.**

Increases strength. Decreases maintenance.

The above is pattern No. 10. Another—No. 10a—is equipped with two receivers.

Representatives in South Africa :

A. J. G. SIMPSON, A.M.I.E.E,
African Life Buildings, 85, St. George's St.,
CAPETOWN.
P.O. Box 239 Capetown. Telephone : 1202 Central.

G. H. B. BERNARD, A.M.I.E.E.
9-10, Cotts Buildings, Rissik and Fox Sts.,
JOHANNESBURG.
P.O. Box 7404 Johannesburg. **Telephone : 408 Central.**

Telegrams : " SIEMENS."

Research and Discovery on Rand Mines.

RECENT INNOVATIONS—ROCK DRILL AND DRILL STEEL INVESTIGATIONS—THE NEW METALLURGY—MEDICAL ADVANCE.

The Rand mining industry is frequently criticised because of the lack of research work on the mines, and the absence of any system to co-ordinate the efforts of those anxious for progress. Some years ago, it will be remembered, the Mines Trials Committee, a body of representatives of all the mines, did useful service, but for some reason or another it was allowed to lapse. As regards medical science and the study of miners' phthisis and native diseases the Medical Research Institute, of course, adequately meets the needs, but in other branches of mining research efforts are less scientifically organised. Each group seems to pursue its individual way, and only when the successful results of some enquiry and tests are given publicity through the media of the local scientific and technical societies or through our own columns, are the other interested parties allowed to benefit by them. In a non-competitive industry such as that of mining on the Rand there is, of course, little reason for secrecy in regard to successful new methods and processes, and beyond the natural feeling that those who profit by a new idea or process should contribute to the cost of "trying it out" there seems no reason why anyone should endeavour to maintain such reticence.

Some Rand Mines Innovations.

At any rate, the Rand Mines, Ltd., makes no secret of the successes achieved by its engineers and metallurgists during the year, and at the annual meeting last week the chairman sketched some of the more important advances recently made on the mines of the group. The only fault to be found with the chairman's references to those notable improvements and advances lies in their meagreness. Doubtless a company meeting is not the best place to enter into details of new features of scientific progress, but it may be hoped that the Rand Mines, Ltd., will encourage their expert investigators to publish in due course full descriptions of the several notable technical advances mentioned by the chairman.

Rock Drills and Drill Steel.

Thus, in dealing with matters of general interest, the Chairman recorded that the efficiency of the various departments had been well maintained, and quiet and steady progress made in many directions. The important investigations instituted by the electrical and mechanical engineering department in connection with the efficient use of rock drills and drill steel have been energetically continued. There is no doubt, he said, that this work will have, and indeed is already having, a marked effect in increasing the drilling efficiency of the mines. It is satisfactory to report also that the supply of compressed air and electricity from the Rand Mines Power Supply Company has been maintained throughout the year without interruption of any moment. The attention of the technical departments is always directed towards securing economy, together with efficiency in the use of these services, which constitute an important item in the working costs of the mines.

Metallurgical Advances.

In regard to metallurgical practice, the Chairman said that the development of de-aeration, referred to in last year's report, has progressed beyond the experimental stage, and plants operating under licence from the Merrill Company, the owners of the patents, have been installed at the City Deep and the Modder B., and are giving satisfactory results. The process has for its object the extraction of the dissolved oxygen from the gold-bearing solution, whereby precipitation efficiency is much increased and satisfactory economies effected.

"In the trials carried out at the Springs Mines, Limited, by the Consolidated Mines Selection Company, in which, by the courtesy of that company, we participated, much valuable information was obtained in connection with the extension of the scope of economic usefulness of tube mills. That information will be of advantage to us."

Health and Sanitation Progress.

Sir Evelyn Wallers added:—"The health conditions on the gold mines of our Group continue to show further progress beyond the excellent figures already recorded from time to time. The total death rate from all diseases among natives, notwithstanding the fact that last year several influenza outbreaks occurred, was the lowest on record, with the exception of the year 1917. The total mortality figure for last year was 11·18 per 1,000, as against 13·95 per 1,000 in 1920.

"In regard to special diseases, one might mention that there has been a great improvement in the incidence of scurvy, as well as in deaths from this disease. The improvement is the result of the prevention and treatment of the disease, and it will probably interest you to know of a newly described method introduced in our native hospitals during the year. This is the intravenous injection of raw orange juice, with most satisfactory results.

"There is a still further decrease in the number of cases of, and deaths from, enteric fever, a most important feature, because this is a disease which is considered as constituting a standard measure of sanitary and hygienic efficiency."

Namaqua Copper.

The report of Namaqua Copper Company for 1921 states that prospecting and development work was carried on to nearly the same extent as during the previous year, and although the increase in the high-grade ore opened up was not so great, a considerable quantity of lower grade ore was developed, the combined total representing a larger increase in total ore and copper than in the preceding year. Owing principally to the coal strike the orders for new plant could not be placed until the beginning of August. The larger portion has recently been delivered at the mines, but owing to the inevitable delay in placing the orders the plant cannot be in operation so early as was anticipated. The excess of expenditure over income was £13,248, which, with the balance brought in makes a total loss of £26,463 carried forward.

TRADE MARK
MAGNOLIA
ANTIFRICTION METAL
"FLOWER" BRAND.

HAS THE LOWEST CO-EFFICIENT OF FRICTION.
KEEPS down the bill for lubricants, making BEARINGS smooth as glass and keeping them COOL under heaviest pressures and highest speeds.
Manufactured and Sold By—
THE MAGNOLIA ANTI-FRICTION METAL CO. OF GREAT BRITAIN, LIMITED.
49, QUEEN VICTORIA STREET, LONDON, E.C.
Agents for South Africa: FRASER & CHALMERS, Ltd., Johannesburg, Bulawayo and Salisbury

RYLANDS' STEEL WIRE ROPES

MANUFACTURED BY:
RYLANDS BROTHERS, LTD.,
WARRINGTON, ENGLAND.

SOLE REPRESENTATIVES FOR UNION OF SOUTH AFRICA:—
ARMSTRONGS & MAIN, LTD.,
84, Marshall Street,
JOHANNESBURG.
P.O. BOX 5988. 'PHONE 5203.

LARGE STOCKS ON HAND.

SPECIALISTS ..

IN THE MANUFACTURE AND DESIGN OF

STRUCTURAL STEELWORK.

ARMSTRONGS & MAIN, LTD.,
GENERAL AND CONSTRUCTIONAL
.. ENGINEERS, ..
84, Marshall Street,
JOHANNESBURG.

P.O. BOX 5988. TELEPHONE 5203.

New Mining Legislation

MINISTER'S EXPLANATION.

The Minister of Mines during the week explained the meaning of the new Bill further amending the Transvaal mining law. He said the introduction of the Bill marked a new departure in the Transvaal legal code. Hitherto legislation had been devoted to dealing with proclaimed land, although clauses had been incorporated dealing with deproclamation and the reversion of surface rights to the original owners; but in outlying districts no deproclamation of any importance had taken place, and on the Rand the Government had delayed deproclamation because it was never known whether particular land would not be required for mining. The question of deproclamation had, however, become more pressing, and the question had arisen of dealing with property which had not been used for mining purposes. In view of these problems he (Mr. Malan) appointed a departmental committee in 1920 to go into these matters, which had reported to him and drafted the Bill. This measure had been considered at conferences of officials, and the outcome was the Bill in its present form.

OBJECTS OF THE BILL.

The Bill amended the existing Gold Laws, but also affected the townships and other laws. The subjects were to some extent technical and obtruse. The main objects were as follows:

(1) To proclaim the old mynpachten. Before 1908 these mynpachten did not become proclaimed land. As soon as a mine was worked out the State lost control, and the illicit liquor and township laws might thus be affected. It was now proposed to put the old mynpachten on the same basis as the more recent ones.

(2) To facilitate the surface use of mining titles. It was now proposed to give the owner some control over land not required for mining prior to deproclamation. At present the owner was divested of surface rights.

(3) Under the existing law when a township sprang up on proclaimed lands certain lands might be handed over for public purposes, but nothing had been laid down as to what was to happen on deproclamation, and it was now provided that this land should vest in the authorities to which they had been granted.

(4) The buildings on deproclaimed land would be dealt with by giving the owner three months' time in which to expropriate the buildings, and then the owner of the building was given three months in which to expropriate the land, and failing this, the buildings were sold by public auction and the proceeds divided between the two parties.

POSITION OF PROSPECTORS.

(5) The *bona fide* prospector and miner would be relieved of the burden of claim licences. If the claim was on Crown land the claim for the first 12 months would be a penny and afterwards 2s. 6d. for the first year and afterwards 5s. He did not propose at any time to convert a prospector's licence into a digger's licence. In this way a revival of prospecting and developing should be encouraged. There would be only one licence for prospecting and mining. By the State giving up its share a large sum would be sacrificed, viz., £168,164 per annum. This would be made up by the increased number of mines worked, especially as the State now came in as the sleeping partner.

(6) Three months' notice must be given of the closing of a mine.

There were a number of other provisions of an administrative character. If the House desired to send the Bill to a Select Committee, he would offer no objection.

A Probable New Oil Field?

A correspondent writes:—"The new trunk line now nearly completed, running from the port of Beira, Portuguese East Africa, to Chinde, on the Zambesi, where it joins the Nyassaland Railways, passes en route through some very interesting country. At a point nearly half way between Beira and Chinde, at a place which has been given the name of Mgagane, lies the focus of the new area which may soon become known to the people of South Africa as the petroleum area. The district has long enjoyed a somewhat unenviable notoriety amongst the natives on account of its water supply, which has prevented anything like close settlement in that quarter. The natives say the water is too bad for drinking, it smells abominably, and is useless for bathing purposes. No fish even will live in the water of this area, hence the unpopularity of the district. However, it has achieved success in another direction as a sort of health resort or convalescent camp for diseased persons. The native witch doctors have earned quite a lucrative interest from the sale of the devil water.

Latterly, the engineers of the Manica Trust have been active in this part of their concession and have devoted a very considerable part of their time and energies towards the working out of the problem of the derivation of the oil in this locality. The work done has demonstrated beyond a doubt the existence of a dome or arch of at least seven miles in extent and about 4 miles wide underlying the places where the water has been contaminated with petroleum. Engineers have long been aware of the possibility of oil discoveries here, and now the matter is settled beyond cavil. It only remains to test the area in order to ascertain the size of the oil field, and then to set to work with drills, etc., so as to tap the underground reservoirs of oil. The area has the tremendous advantage of having a railway line running right through it, and of being in immediate connection with a thriving port.

The Directors have discussed the possibility of running a pipeline direct to Beira. There are no engineering difficulties in the way, as the whole country is flat and almost devoid of hills. Recently a new expedition has been sent there to prepare the ground for active work. The managing director is now in London and will doubtless soon be able to arrange for the despatch of suitable oil-boring machinery and engineers from home.

It may be added that a well-known oil group is interesting itself in the enterprise and may take the whole thing over from the trust as a separate undertaking.

It may interest geologists to know that a true fossil bone bed has been discovered in this area, and that this discovery, coupled with surface evidences of the presence of oil and fortified by the reports of natives as to the contamination of the waters by some strong smelling moisture, all led to the assumption of a possible oil field, and the resultant investigations have more than confirmed this opinion."

MINES DEPT. EXAMS.
CERTIFICATES AWARDED INSTITUTE.

MANAGERS' EXAMS., September, 1921, January, 1922.

We obtained 15 out of a total 22 certificates awarded in South Africa

	Metal	Coal	Totals
Ours	9	6	15
Rest of S.A.	4	3	7
	Total for S.A.		22

OVERSEERS' CERTIFICATES.

During the past ten months we have secured **ALL** the Overseers' Certificates issued in South Africa, except 3 metal and 3 coal.

TUITION (Metal or Coal) by class, correspondence or privately

Mining Institute (Prof. Yates),
St. James' Mansions, Eloff St. Johannesburg

Graphite in 1921.

MADAGASCAR'S POSITION.

The world's production of graphite in 1921 reached a lower figure than at any time since 1902, as shown by the statistics at present available, according to Arthur H. Redfield, of the United States Geological Survey, Department of the Interior. The world-wide depression in the graphite industry which characterised the year 1920 was continued in 1921. The stagnation of graphite mining in the United States is both a part and a result of world-wide conditions, the natural consequence of the overproduction in 1917 that was stimulated by the abnormal demand for graphite crucibles during the world war.

Madagascar Output.

Madagascar was the weak link in the chain of the world's graphite production in 1921. The overproduction of graphite in that island in 1917 left surplus stocks on hand that were estimated at 32,500 metric tons on April 1, 1920. The exports during the remainder of the year, chiefly from old stocks, reduced this amount to about 20,300 tons. If this amount is added to the 4,000 tons or more produced in 1920, the stocks on hand in Madagascar at the end of 1920 were between 24,000 and 25,000 tons. About nine-tenths of these stocks consists of flake graphite, of which three-fourths averages from 80 to 90 per cent. in purity. The 14,919 metric tons of graphite exported from Madagascar in 1920 by no means represented genuine sales. The shipments were made largely on consignment and helped to glut an already overstocked market. Consequently exports in 1921 were small, and even this avenue of relief did not avail to any great extent to remove the congestion of stocks. Only 2,470 metric tons was exported in the first half of 1921, as compared with 6,798 tons in the first half of 1920. It is estimated that not more than 5,000 tons was exported from Madagascar in 1921, and during that year production may be assumed to have practically ceased.

The producers of graphite in Ceylon have for many years felt the competition of those in Madagascar. The Madagascar graphite is more easily worked, and for many uses it has proved to be a fairly adequate substitute for Ceylon graphite. The acknowledged superiority of the Ceylon graphite has not been sufficient to enable it to maintain its price in competition with the cheaper Madagascar graphite. In 1921, when Madagascar graphite was a drug on the market, the average export price of Ceylon graphite, as shown by the Customs statistics, amounted to 9.268 rupees ($2,36 at prevailing exchange) a hundredweight of 112 pounds, as against 11.408 rupees ($4.74) a hundredweight in 1920. The average export price in 1921 dropped from 12.36 rupees ($3.15) a hundredweight in January to 6.31 rupees ($1.61) in April, and rose to 8.28 rupees ($2.11) in July. Prices quoted on the Colombo market, as in the two preceding years, were purely nominal; there were few buyers.

Effect of Low Prices.

The effect of the low prices of Ceylon graphite, as quoted on the New York market, on the graphite industry of the United States is too well known to need comment here. This depression was shared by the graphite industry of Canada, which is owned by American capital, and ships its product to the United States. Shipments of amorphous graphite from Mexico shared this depression to a less extent. The production of graphite for industrial use in all the countries of Europe except Germany suffered from the depression due to the overstocked condition of the Madagascar market. The depreciation of the mark in international exchange protected the Bavarian product from destructive competition with Ceylon graphite. The Madagascar graphite, though cheaper, could not displace the Bavarian graphite because of the difficulty in separating the mica content of the Madagascar product. Graphite was imported into Germany chiefly from Austria and Czechoslovakia, and production in these countries in 1921 depended almost entirely on the German demand.

Little definite information is available with regard to the production of graphite in Chosen and in Japan. Data gathered from foreign trade statistics indicate, however, that the production in both these countries was reduced in 1921.

The Busy Man's Column.

WHAT TO READ IN THE TECHNICAL PRESS.

Mining and Metallurgy.

"Tellurium."—Mining Magazine, May, p. 277

Hydraulic Sand-Packing.—Canadian Mining Journal, April 28, p. 259.

Heap Leaching of Low-Grade Copper Ores.—Journal Press, April 29.

Engineering.

Steam Turbine Reliability and Design.—The Engineer, May 12.

A Sleeper Creosoting Plant.—The Engineer, May 12.

Developments in Power Station Design.—The Engineer, May 12.

Alcohol for Internal Combustion Engines.—The Engineer,, May 12.

Pit Shaft Gate Control.—Iron and Coal Trades Review, May 5.

The Spearing Boiler.—Iron and Coal Trades Review, May 5.

Stone Working Machinery.—Edgar Allen News, May, p. 283.

Application of Ball and Roller Bearings.—Colliery Guardian, May 5.

Electricity.

Recent Developments in Power Production.—Colliery Guardian, May 12.

Coal and Coke.

Recovery of Fuel from Furnace Refuse.—Coal Trade Journal, May 3, p. 401.

Compressed Air in Coal Mining.—Compressed Air Magazine, May.

Fuel in Science and Practice.—Supplement to *Colliery Guardian*, April 28.

Symposium on Low-Grade Temperature Carbonisation.—Colliery Guardian, April 28.

Production of High-Grade Coke.—Colliery Guardian, April 28.

Economics.

The Philosophy of Cutting.—The Engineer, May 12.

Labour Trusts.—Iron and Coal Trades Review, May 5.

The Marketing of Silver Bullion.—Journal Press, May 6.

Labour Saving Machinery vs. Labour Unions.—Compressed Air Magazine, May.

The Engineering Dispute.—Colliery Guardian, April 28

Iron and Steel.

Iron and Steel Institute Annual Meeting.—Iron and Coal Trades Review, May 5.

British Siemens Furnace Practice.—Iron and Coal Trades Review, May 5.

Oil and Oil Shale.

The Petroleum Industry.—Journal Press, May 6.

Transport.

Some Post-War Problems of Transport.—Colliery Guardian, May 12.

OUTSIDE DISTRICTS

Barberton Activity.

The following particulars of mining for the month of April, 1922, are supplied by Mr. L. G. Deglon, Secretary to the Barberton District Mine Owners' and Managers' Association:—Number of mines producing, 7; number of stamps working, 80; tube mills, 2; tons of ore treated, 5,877; fine gold (ozs.) recovered, 2,731.953; value at £4.24773, £11,605; small mines and miscellaneous, fine gold oz., 155.040, value £659; total gold output, fine oz., 2,886.993, value £12,264; labour, whites 142, coloured 2,109. Chamber of Mines estimated value per fine oz., £4.600; claims held for month ended 30th April, 1922: prospecting permits, 32; prospecting claims, 2,050; diggers' claims, 246; base metal claims, 9,519; total claims, 11,815.

* * *

New Diamond Diggings.

The *Government Gazette* of May 26 contains a notice proclaiming the farm Thompson's Hope A, and certain portion of the remaining extent of N.W.4, being sub-divisions of the farm N.W.4, in the division of Herbert, alluvial diamond diggings, under the names of Thompson's Hope A and Remainder N.W.4. It is further notified that the Inspector of Claims, Barkly West, will attend at the farm "Thompson's Hope B," at 11 a.m. on Friday, 9th June, for the purpose of reading the Proclamations, Nos. 182 of 1918 and 80 of 1922, proclaiming the farms "Thompson's Hope B," "Thompson's Hope A," and certain portion of remaining extent of N.W.4 as alluvial diamond diggings under the names of "Thompson's Hope B," "Thompson's Hope A," and "Remainder N.W.4," when it shall be lawful for any person who is the holder of a current digger's certificate to peg off one claim thirty (30) feet by sixty (60) feet in the areas proclaimed after the owner and discoverer have pegge off the claims to which they are by law entitled.

* * *

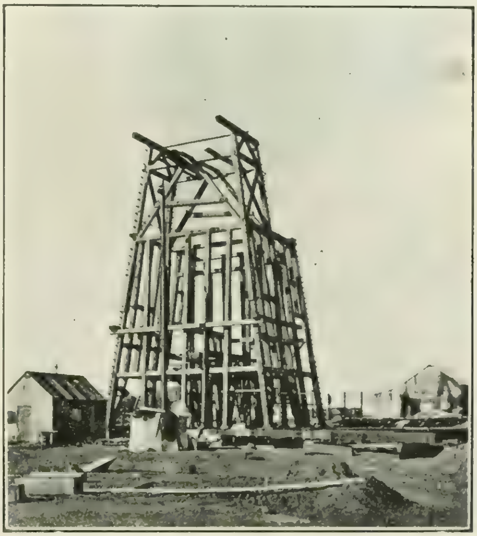
THE POSITION AT MESSINA.

As no very clear conception is entertained of what the recent delegation which interviewed Ministers at Capetown in regard to the position at Messina practically accomplished, the following may briefly indicate some of the concessions actually secured: The re-opening of the Messina Mine under more favourable conditions; direct telephone communication with Messina; three trains per week; re-valuation of Crown lands. By an entirely warrantable bonus system, Government has so arranged that the requirements for the projected electrification of portions of the maine line will be met by the company, thus securing the expenditure of some £300,000 in the country, which otherwise would have gone abroad

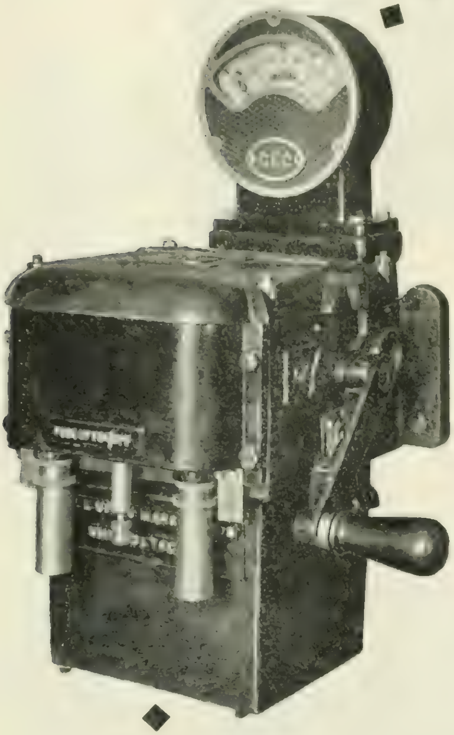
* * *

WEST END DIAMONDS.

An interesting reference was made to the West End Diamonds, Ltd., by Sir Julius Jeppe at the annual meeting of the S.A. Townships, Mining and Finance Corporation, Ltd. He said, *inter alia*:—This company started washing operations at the end of March. Unavoidable delay occurred in starting up the new washing plant, mainly due to the strike in Johannesburg, where the larger portion of the plant was being constructed. The plant has fully come up to expectations and is running satisfactorily. As you know, the plant is equipped with crushers and is designed on the most modern and up-to-date lines. So far the results obtained can be considered quite satisfactory. The quality of the diamonds recovered is excellent, and despite the depression in the diamond market have been sold at approximately 60s. per carat. At this figure, and treating the normal amount of ground, substantial profits should be earned; and I think the shareholders can be congratulated in being interested in a diamond mine of which the prospects are so encouraging. It has naturally been an expensive and arduous task to fully equip a mine of this description, nearly 130 miles from a railway and in a country in which natural facilities are practically absent and great difficulties in the way of transport, water supply and fuel had to be overcome. The work had to be undertaken too during times of stress, and when the cost of machinery and material was high. To summarise the position, the West End Mine to-day is equipped with modern plant and every facility for cheap working; the mine itself is opening up well and should be cheaply worked; and, given normal conditions as regards the diamond market, a prosperous future can safely be looked for.



Headgear, No. 2 Shaft, Battery Reef, Randfontein.



B. G. E. C. Oil Switch

for Wall or Pedestal Mounting

STANDARDISED in sizes up to 200 amps., 650 volts. Built on the same sturdy lines as the B.G.E.C. Switchboard Type.

Special Features:

1. Contacts are of the Wedge Type.
2. Sparking Fingers of solid copper are provided. These close first and open last and are easily renewable
3. Moving Contacts are mounted on steel bars which are encased in "Bakelite" insulation.
4. For Leading-in Cables a special adjustable self-locking terminal is provided.

Stocked With

Two Overload and one No Voltage Trips and adjustable time lags.

Can be supplied with three overload trips if desired.

Attachments:—Special provision is made for bolting an ammeter to the switch, also for fitting cable boxes.

The British General Electric Co. Ltd.

Representing The General Electric Co., Ltd., of Eng.

Head Office:—

Johannesburg

Corner Loveday and Anderson Streets
Box 2406 Phone 4242 3 Tel.: "Current"

Capetown
83/89 Castle St.
Box —— 1327
Phone — 1401 2
Tel. 'Induction'

Durban
56 Field Street
Box —— 922
Phone — 1793
Tel.—'Ampere'

Agents at—Port Elizabeth, East London, Maritzburg, Bulawayo, Delagoa Bay, Beira, Dar-es-Salam, Tenga, Zanzibar, Mombasa, Nairobi, Uganda, Etc.

Finance and Information for Investors.

AN EXAMINATION OF BALANCE SHEETS AND REPORTS—DATA FOR SHAREHOLDERS.

Standard Bank Profits.

The General Managers of the Standard Bank of South Africa, Limited, have received cable advice that the Board of Directors have resolved to recommend to shareholders at the next general meeting to be held on July 26th, a dividend for half year ended March 31st at the rate of 14 per cent per annum, together with a bonus of 2s. 6d. per share, both subject to income tax, making a total distribution of 16½ per cent. for the year, to appropriate £50,000 to writing down bank premises and £100,000 to pension fund, carrying forward a balance of about £191,000. All other usual necessary provisions have been made.

Reserve Bank Notes.

The notes of the Reserve Bank are gradually making their way in to use. Referring to their introduction, the governor of the bank, Mr. Clegg, at the annual meeting the other day, said that last December they received the first instalment of their supply of bank notes, and gave the statutory notice to the Treasury that the bank was in a position to issue notes. The Treasury, in accordance with the Act, then gave notice to the other banks that their issue of notes must cease on June 30th, 1922. After that date, therefore, all notes issued by the banks in South Africa would be Reserve Bank notes. To avoid any misunderstanding, Mr. Clegg added that the notes of the other banks would, of course, remain current so long as they were in the hands of the public. It was only when they were paid into the bank by which they had been issued that they would cease their career of usefulness. They could not be re-issued, and in course of time, as the old notes returned to their "long home," the Reserve Bank note would be the only note in circulation.

Hamony Proprietary.

This company has been in existence for 30 years. It has never paid a cash dividend, but has been often reconstructed, and now, in addition to share capital of £1,000,000, has two lots of debentures in issue. Last June £150,000 8 per cent. debentures were offered, repayable at par December 31, 1935. It now appears that £83,600 were placed, and shareholders are now being asked to subscribe the balance of £66,400. They are offered these "at the special" price of 75 per cent., and are told that if sufficient applications are not forthcoming there will be no alternative but reconstruction with an assessment.

Anglo-French Exploration.

The report for 1921 states the severe depression in business which prevailed throughout the year seriously interfered with the company's operations, and had an adverse effect on the year's accounts. The amount received in dividends and interest compares favourably with recent years, but market conditions have prevented profitable dealings and realisations. For the first time since the early years of the company the profit and loss account shows a small debit balance (after providing interest on debentures and writing off a considerable sum spent on investigations of properties), while the market value of the company's holdings as at December 31, shows a depreciation. The directors believe that when the new labour conditions on the Witwatersrand become operative the industry will be carried on with far greater efficiency and economy than for many years past, and that with an improvement in trade, of which there are some indications, the company's holdings in base metal mines, and in oil, will appreciate in value. The cash position of the company is satisfactory. Profit and loss account shows a net realised loss of £4,869, after payment of interest on debentures and writing off realised losses. This amount has been placed to debit of appropriation account, leaving a balance to credit of that account of £38,546, which it is proposed to carry forward. The customary valuation of assets was made by the directors at the end of the year, which showed the net amount to be £644,551, leaving a deficiency of about £65,500, as compared with the paid-up capital and outstanding debentures of the company. The directors regret that, under the circumstances, they are unable to recommend the payment of a dividend.

South African Reserve Bank.

The statement of the South African Reserve Bank for the week ended June 3 showed ratio of cash reserves to liability to public of 73.2 per cent.

"C.M.S." Finances.

The financial results for 1921 of the Consolidated Mines Selection Company were pretty clearly foreshadowed in the preliminary statement published some time ago. The full accounts now available, however, indicate that the profit was even smaller than the amount conjectured from the figures then available. The income—entirely derived from interest and share dividends—totalled £69,150, and after deduction of expenses, interest, taxation, and net losses of £11,250 a net surplus remained of £23,700. With the balance brought forward from 1920 and the £100,000 transferred from reserve towards meeting depreciation on holdings a total of £177,100 was available. Of this £152,000 was written off. The reduction thus arising in the balance sheet valuation of the portfolio has been somewhat increased by the decision of the directors to reduce the company's commitments outside South Africa. Debtors and cash are also less than before; as a result the balance sheet total has shrunk by £376,100 to £1,157,500. While the substantial sum above referred to has been applied to cover depreciation on certain of the company's holdings no account has been taken of appreciation in the quoted securities.

THE JUNE DIVIDENDS.

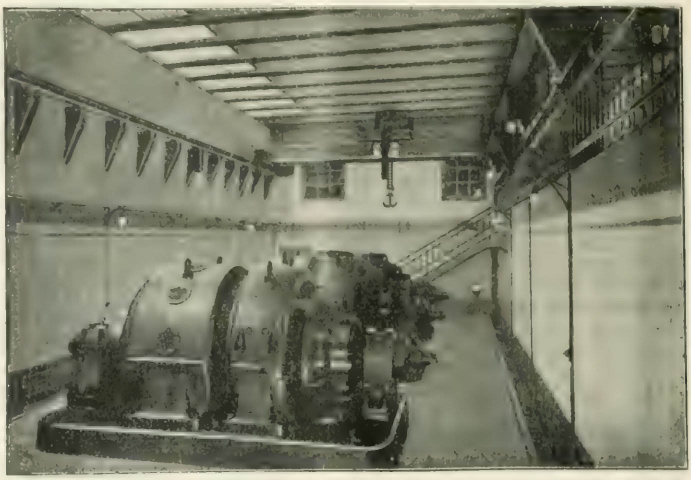
To the Editor, *S.A. Mining and Engineering Journal.*

Sir,—Enclosed find letter I have addressed to the various heads of the mining companies of Johannesburg, with reference to the declaration of dividends for the coming half-year. I shall esteem it a favour if you will publish this letter in the interests of shareholders.—Yours, etc.,

EDGAR M. HYMAN.

Sir,—As we are approaching the time for the declaration of dividends, I would like to bring a few matters to your notice with reference to these declarations. We all know that on account of the terrible strike during the first three months of this year the profits of the gold mines will be very small for the current half-year, and possibly in a few instances losses will be shown, therefore I know it is impossible for big dividends to be declared. At the same time I hope the various companies under your control will take into consideration the large number of shareholders both in South Africa and England, who depend upon their dividends from the gold mines for their living, and hope you will do the best you can in the interests of these shareholders. Most of the companies under your control carried forward large amounts at the end of last year, and I presume that amounts that are carried forward from year to year are carried forward for the purpose of being utilised in emergencies such as this. Most of the money carried forward, I presume, is liquid and can be used. I therefore hope in the interests of the shareholders that you will not saddle them with the entire responsibilities of the loss incurred during the first three months of this year, but will use your best endeavours in connection with the companies under your control, and use as much as you possibly can of the amounts carried forward from last year, to assist these shareholders in getting a fair dividend.—Yours, etc.,

EDGAR M. HYMAN



Converting Plant
OF ALL TYPES.
OUR ILLUSTRATION SHOWS A
CASCADE
CONVERTER SUB-STATION
Arnold-Bragstad-La Cour
Patents.

SEND YOUR ENQUIRIES TO—

C. KLEUDGEN, LTD.,

Corner of LOVEDAY and MARSHALL STREETS, JOHANNESBURG.

P.O. Box 1164. Telegrams: "KLEUDCO." Telephone Central 5435.

MILLAR DENNIS
ORIGINAL MAKERS OF

"BRADFORD INVERTED"

PLUG COCKS.

SOLE AGENTS:

GEO. CRADOCK
—AND CO. (S.A.), LTD.—
75-77, CULLINAN
BUILDINGS.

P.O. Box 316. Telephone 539.
Tel. Add.: "ROPES."
JOHANNESBURG.

We beg to announce our
association with the
Ingersoll-Rand Company
in the operation of a

NATAL BRANCH OFFICE
SITUATED AT
338a, SMITHSTREET,
DURBAN

ROBINS CONVEYORS (S.A.), Ltd.
(Head Office: Robins Conveying Belt Co., New York, U.S.A.)

Conveying & Hoisting Machinery,
Material - Handling Appliances
:: :: and Installations. :: ::

P.O. BOX 4736———TELEPHONE 4182
JOHANNESBURG.
P.O. BOX 811———TELEPHONE 3383
DURBAN.

The South African Mining and Engineering Journal.

HEAD OFFICE: 176-180 Stock Exchange Buildings (2nd Floor), Fox Street, JOHANNESBURG, Union of South Africa.
Telephone **913.** P.O. Boxes **963** and **4573.**
Cables and Telegraphic Address: "MINING JOURNAL."

ANNUAL SUBSCRIPTION RATES: Oversea, £2; Union of South Africa and Rhodesia, £1 10s.; Local Delivery (Town only), £1 6s., payable in advance.

AGENTS FOR GREAT BRITAIN AND AMERICA: Argus South African Newspapers, Ltd., Byron House, 82-85, Fleet Street, London, E.C. 4.

Copies of this Journal are obtainable at all Branches and Agencies of the Central News Agency, Ltd., at all News Agents and Railway Bookstalls throughout South Africa, and at the London Agency as above.

CONTENTS. PAGE

Research and Discovery on Rand Mines 1347
New Mining Legislation 1349
A Probable New Oil Field 1349
Graphite in 1921 1350
Outside Districts:
  Barberton Activity; New Diamond Diggings; West End Diamonds 1351
Finance and Information for Investors 1353
Topics of the Week 1355
Rhodesian Section:
  Rhodesia G.M. Co., Ltd., The Trans-Zambesi Railway, Rezende Mines 1359
Belgian Congo:
  Tanganyika Concessions Progress 1361
Share Market 1363
Letters to the Editor 1364
Engineering Section:
  The Control of Electricity Supply 1365
Trade and Industries Section:
  The Week in the Mining Material and Engineering Trades 1369
Company Meetings:
  Rand Mines; Crown Mines; Durban Roodepoort Deep; Anglo-American Corporation; S.A. Townships, Mining and Finance Corporation 1373

TOPICS OF THE WEEK.

The Legislative Programme.

The Prime Minister made an important statement during the week regarding the length of the present session and the legislative programme remaining unfinished. A number of Bills are to be held over, amongst them the Companies Bill and the Miners' Phthisis Bill. Owing to the "special circumstances"—as the Prime Minister put it—that involved so much waste of time at the beginning of the session, this step is not unexpected. The Government thinks that the Bills to be brought forward are of a non-contentious nature, such as the Iron Bounties Bill and the Railway Development Bill. The latter was described by the Prime Minister as the most important Bill to be brought before the House. In this connection it is rumoured that the Government will announce a new loan of twenty-five millions to be issued in London. It is to be hoped that South African investors will be given an opportunity of subscribing for it direct, *i.e.*, without having to apply through London. The new programme of railway development together with the contemplated irrigation and afforestation schemes will, it is thought by the Government, solve the unemployment problem, and render unnecessary recourse to the heroic measures recommended by the Unemployment Commission.

Anglo Americans and Diamonds.

One of the most interesting passages in the review of the Anglo-American Company's affairs, written by Sir Ernest Oppenheimer and read by Mr. F. R. Lynch at the annual meeting, dealt with diamonds. The Anglo-American Company is largely interested in the Consolidated Diamond Mines of South-West Africa, and consequently in the state of the diamond market. The chairman announced that the financial position and the arrangement of the affairs of the diamond company were such that it could face the present depression in the trade with patience and confidence; in other words, it could subscribe to and carry out, without misgiving, the policy of "not forcing diamonds on an unwilling market." This policy has helped the diamond trade over every crisis in the past, and it will be found just as efficacious now.

He was also glad to announce that the Corporation had established friendly relations with the Societe Internationale Forestiere of Miniero du Congo, who own or control the Congo and Portuguese diamond fields, which contain the only important diamond deposits outside the Union. "I hope," he said, "that I shall be able to cement and strengthen these friendly relations during my visit to Europe to the advantage of both producers, and thereby promote the stability of the diamond trade. I am pleased to be able to say that our reports from London indicate that signs of improvement in the diamond market are increasingly manifest, that the trade is successfully passing through the present severe ordeal, and that a distinct improvement in the diamond trade can confidently be expected in the not too distant future."

The Rand Mines' Review.

The speech made by Sir Evelyn Wallers at the annual meeting of the Rand Mines meeting, was on the whole of an encouraging nature. He did not waste much time discussing the tragic events of the recent past, but he dealt at length with the outlook under the new conditions. That, after all, is the main question, in which we are all interested, and the Chairman replied to it with convincing candour. "I think," he said, "there is much ground for encouragement. The native labour force, depleted by the strike, is fortunately being rehabilitated in numbers at a greater speed than some of us anticipated, and this month operations as a whole should get very near the normal figures, both as regards milling and development work. The main items in working costs, where a sensible diminution is occurring —and which we hope will be in evidence to a greater extent during the remainder of this year—are the cost of stores and material and European wages." Sir Evelyn went on to explain the expected savings in stores and wages, and he concluded: "That is the position, as far as I can see it, and it is not without a good deal of encouragement. I need not labour the point that if we all do our best for efficiency, there will be, with reduced working costs, a vast amount of ore, already developed in the mines of these fields, that was out of the picture last year owing to the excessive figure of working expenditure that will be assuredly in the picture this year — a matter of the highest importance to all concerned. The first three months of this year were, as you know, occupied with the strike, and heavy losses were naturally sustained by our companies. April registered a considerable improvement, and last month and this month will, I am sure, show still greater progress in the earning of profits; but obviously the dividend distributions from our companies for this half-year will be either non-existent or very severely curtailed. That is a conclusion that must have been apparent to all. On the other hand, the outlook for the remaining six months of this year, in our belief, as I have tried to show you, is good." Of course we are not yet out of the transition period, and chairmen are naturally inclined to fight shy of prophecy. But it is possible to extract considerable ground for confidence from the moderate and guarded utterances of the chairman of the Rand Mines.

The Crown Mines Meeting.

Though shareholders may be familiar with the position of the Crown Mines from the advance issue of the annual report, they will find a perusal of the speech by Mr. Samuel Evans at the general meeting useful in explaining the exact state of affairs. Mr. Evans clearly showed that the main difficulties were not connected with the value of the ore reserves. In fact, taken as a whole, the ore reserve position is satisfactory, and justifies the company in taking a hopeful view of the future prospects of the mine. "When the Crown Mines was formed," said Mr. Evans, "Mr. Webber never anticipated a higher average grade than five and a half to six dwts. from most of the areas from which we are now drawing ore. Of the ore developed last year, 79.1 per cent. was payable, and totalled 2,250,000 tons of an estimated average value of 6.3 dwts. We have now exposed on the 1000 level a stretch of good Main Reef leader 2,500 feet long. Owing to the strike the amount of development done this year has been small, but I may mention that the values exposed in the lowest levels of the mine continue satisfactory. As you will see from the report of the consulting engineer, our available ore reserves totalled on December 31st last 8,511,200 tons, estimated to carry 6.1 dwts. over a stoping width of 61 inches, as compared with 8,131,700 tons, averaging 6.4 dwts. over a stoping width of 62 inches at the end of 1920. There are also fully developed in the mine close on 6,000,000 tons of ore of an average value of rather more than 3 dwts., which is to-day classed as unpayable." Mr. Evans put the position in a nutshell by saying: "Were it possible to bring costs down to something approaching the level which prevailed when the Crown Mines came into existence, the bulk of this ore could be worked, thereby adding to our profits, increasing the life of the mine, and affording greater scope for employment. This, I believe, is typical of the position of a great many other mines, and shows how important it is in the interests of this industry and of the country that there should be a substantial reduction in working costs." Mr. Evans went on to show how the inefficiency of labour was the main cause of high working costs, and his remarks under this head will be found to constitute a weighty and thoughtful contribution on this all-important question. We hope to devote more space to this portion of Mr. Evans's speech next week, as also to the re-statement of his well-known views on the currency question.

The Romance of the Langlaagte Proprietary.

The Rand seems now to have heard the last of M. Lebaudy, the *soi-disant* "Emperor of the Sahara." Mr. Samuel Evans announced at the Crown Mines meeting that the Crown Mines and the Langlaagte Estate and Gold Mining Company have recently purchased from the estate of the late Henri Jacques Lebaudy the Langlaagte Proprietary claims, bewaarplaatsen, water rights, machine stands and freehold ground for a total sum of £55,100. The mining ground has been divided between the two companies on a basis agreed upon by their technical advisers. This transaction gives the Crown Mines approximately 35 reef-bearing claims, which can be opened up and mined from existing drives without much delay and with comparatively little additional expenditure on capital account. The chequered history of the old Langlaagte United or Langlaagte Proprietary is too well known to call for repetition here. It may merely be recalled that it was bought at a public auction by the late M. Lebaudy for £150,000, the auctioneer being Mr. Richard Currie. Mr. R. R. Hollins nearly acquired it from its eccentric owner some years ago under romantic circumstances, and it is an open secret that M. Lebaudy refused for the property at one time an amount nearly double what it recently fetched. It may not be generally known that an unsuccessful hunt for hidden treasure, in which well-known Randites were interested, was also made on the property some years ago.

Sir Ernest Oppenheimer's Optimism.

A note of cheery optimism pervaded Sir Ernest Oppenheimer's annual review of the mining industry as read at the Anglo American meeting. Having described the position at the several mines of the group and the recent labour upheaval, he summed up his remarks on the all-important question of labour conditions by saying: "The non-recognition and decline of the Federation must also make a distinct difference to the powers vested in the Chamber of Mines by its individual members. The managers have had restored to them the powers which they had before the Federation became prominent, and I feel confident that only good can come of the alteration. Managers will once again feel their responsibilities intimately, not only to the company but also to the employees, and, if tact and consideration are exercised on both sides, a much better atmosphere is bound to result. Speaking for the companies in which we are specially interested, we expect managers to run their mines economically and efficiently, but also with as little friction as possible. Managers and officials know that they cannot carry out their duties successfully unless there is goodwill between management and workmen, which can only be brought about by treating employees with all fairness and consideration, and in return the men must render a fair day's work for a fair day's pay."

On the question of differentiation between rich and poor mines, Sir Ernest repeated with emphasis the views he had already expressed before the Mining Industry Board. Premising that everything possible should be done to encourage people to find money for new mining enterprises, whether it be gold on the Rand or in other parts of South Africa, or whether it be coal, copper or tin, Sir Ernest went on to picture the vicissitudes of mining. Mining, he said, is so risky an undertaking, and on the Witwatersrand with its deep shafts, so very costly, and the failures are so many, that one should not begrudge the big returns paid by some successful mines, which in many cases only average the losses of shareholders who have in the past put up their good money for the development of these fields in ventures which have not been successful. It should be a matter of congratulation that good luck is sometimes met with in mining. It is the lure of the occasional big return which induces financiers in South Africa and overseas to find again and again the money for new enterprises. "If the principle were laid down in this country that the unemployment on the gold mines may be solved by examining the bank balances of the richer mines, and forcing them to spend their balances in the employment of redundant men simply because they appear for the moment to be able to afford it, then capital will indeed be frightened away from South Africa, and that, I am sure you will agree, would be little short of a national calamity. I am confident," he added, "that any impartial enquirer will find that differentiation between mines, whilst leading to the immediate employment of some extra men, is in the permanent interests neither of the men, nor of the State, and would have far-reaching effects to the detriment of the development of South Africa."

Leeuwpoort Tin and the Metal Slump.

The wretched price of the metal still keeps the tin industry in the doldrums; and Sir Julius Jeppe, who presided at the annual meeting of the Leeuwpoort Company this week, could only counsel patience to the long-suffering shareholders. The company, fortunately for it, has enjoyed the generous financial support of the S.A. Townships, Mining and Finance Corporation during the dark days of the tin slump, and the directors have discussed the advisability of the total closing down, but on the recommendation of their technical advisers, have abandoned that idea since it is considered probable that accumulation of water would interfere considerably with resumption of work and entail considerable expense. There remains the question of reconstruction which is having earnest consideration, and it is more than probable that some scheme in this connection will be put before the shareholders in the near future. The chairman summarised the position by saying that the mine is in as good a position as at any time in its history, water supplies are adequate, plant is ready to restart to its full capacity at any moment. "Like other mines, we shall no doubt reap the benefit of the reduction in the price of stores, and it is also anticipated that working costs in the future will be reduced by the higher efficiency which is confidently expected from white and natives, as a result of which we have little fear, but that our future costs will compare very favourably with any tin mine. All that is really required to enable the company to reach its old position of prosperity is what may be termed a normal price for tin."

The Burden of Taxation.

The Rand and the inland centres are not alone in calling out against the excessive burden of present taxation. Even the coast people feel the pinch, and a notable protest was lodged by the chairman of the Capetown Chamber of Commerce at the annual meeting of that body last week.

"In general taxation," said the chairman, "the economic limit has been reached. Trade and commerce to-day are seriously handicapped by carrying the load of taxation in force. Any increase will eliminate the weaker and aggravate the already complex problem of unemployment. This being the case, there only remains the question of economy of administration to be considered. This problem is receiving the attention of almost every country of the world. Here, with a population of 1,500,000 whites, the cost of administration is abnormally high. I am convinced if this matter were carefully investigated a very considerable economy could be effected. The great spending departments of the Government should be most carefully controlled, and the signs of the times as they affect the revenue considered before any large expenditure is authorised. Along these lines the end must be achieved. It may prove unpopular from the political point of view, but stern necessity demands the balancing of the account. Its accomplishment is possible if courageously and diplomatically handled. The evils of excessive taxation could not be too frequently emphasised. The policy of depriving business enterprise of its just reward by increasing or excessive taxation blunted enterprise and initiative, and in the aggregate stagnated and impeded the commercial and industrial development of a country. It behoved the Government not to add to but to reduce taxation. The majority of the people were taxed to their full capacity, and it was only by a relaxation of that taxation and the curtailment of expenditure that a return to a more stable state of things could be expected."

The Railways and the Rand.

Mr. W. A. Martin, the new President of the Johannesburg Chamber of Commerce, rendered a distinct service to both the mining and the commercial communities last week by his scathing criticism of Union railway finance. Mr. Jagger made a lame attempt to reply to him this week, but according to the telegraphed summary of the Minister's speech in the House, Mr. Martin's case remains practically undisputed. In the course of a long and closely-reasoned statement, Mr. Martin analysed the railway deficit, and having dealt with the various factors in railway policy to which the deficit was attributable, considered whether the principles of railway finance were conformable with the terms of Sections 127 to 132 of the South Africa Act, and asked whether anyone could say that the railways have been used for the common benefit of the whole community of South Africa. Could it be said that the railways had been administered with a view to establishing and encouraging industries in the inland colonies, when a large proportion of the mining industry had been crushed out of existence, partly owing to the imposition of heavy tariffs in excess of those in operation under less favourable economic railway conditions elsewhere in the Union, with the object of extorting from the mines the last penny of profit on the ground that "they can afford it." They had, continued Mr. Martin, a right to expect that members of the House of Assembly representing inland towns and districts, irrespective of party, especially those representing the Witwatersrand, should demand an inquiry as to whether or not the conditions of Articles 127-132 of the South Africa Act were being complied with by the Railway Administration. If these clauses were the Magna Charta of the inland portions of the Union, they had a right to insist on their strict observance. Unless satisfied that such was the case, they had their remedy. Neither the Government nor the Railway Administration was a law unto itself. They were entitled to bring them before the Courts for a decision as to whether or not they were carrying out the obligations laid upon them under the Articles, and if the Court decided against them, an order could be made compelling them to do so. Under such circumstances, other points having far-reaching consequences might be raised. In summing up a lengthy survey, Mr. Martin said they were justified in demanding:

(1) That the railway deficit be transferred to the Consolidated Revenue Fund.

(2) That the railways be relieved of payment of interest on capital, "being capital contributed out of railway and harbour revenue."

(3) That preferential rates be abolished.

(4) That the loss, if any, on export oversea competitive and distribution rates be charged against the Consolidated Revenue Fund.

(5) That the extra cost of white labour (relief) be debited to the Consolidated Revenue Fund.

(6) That the services rendered by the railways to other Government Departments be charged for.

(7) That discrimination between certain classes of traffic in favour of Natal and the Cape Province be abolished.

(8) That no branch or other lines be built unless any losses incurred in their working be recovered by a levy of a special assessment on the land developed or be borne by the Consolidated Revenue Fund.

(9) That any further losses on the lines of the South West Protectorate be charged to the Consolidated Revenue Fund.

(10) That the Witbank-Rand coal rates and local Rand coal rates be reduced.

Sir Abe Bailey Hits Out!

Sir Abe Bailey had also something very straight and clear to say in regard to railway finance in the House during the week. In the course of the debate on the South-West African Railways, Sir Abe said that the present position in regard to the railways necessitated something being done, because the present deficits had their effects on all industries in the country, especially the gold mining industry, which, as Mr. Burton had said at Ladysmith, was carrying South Africa on its back. The gold mining industry had passed its peak and was now descending, and might be extinct in 50 years' time. Sir Abe asserted that the only industry that would take the place of mining was the agricultural and pastoral industry. High railway rates had also been the means of closing the poorer mines, because the poorer the mine the more it was handicapped by high rates. He maintained that the South Africa Act never intended that the railways should be made a haven for the poor whites and unemployed. What was intended was that due regard should be paid to the agricultural and industrial development of the country. It was never intended that the Witwatersrand, Kimberley and Pretoria should carry the 65 non-paying lines amounting to over 5,000 miles as the Minister had stated. Sir Abe next asserted that rates had been increased on general cargo since 1914 to the extent of £650,000. He pointed out how high railway rates affected cement. Not merely did they hamper the cement manufacturing industry in competition with imported cement, but they also affected the coal, which was required in the manufacture of cement and made it [illegible]. He argued that the effect of the present railway rates was to drive industries and population to the coast, where most of the work was done by coloured workers. No doubt this fact was very pleasant to the merchants at the coast. He calculated that 17 per cent. of the white population lived near the coast and these contributed practically nothing to the railway revenue. If the policy of the South Africa Act in relation to the white population was to be followed it could be by industrial development, and it was desirable from the point of view of defence that the white population should be distributed through the Union. Seeing that the branch railways were for the benefit of the whole people of the Union, the whole of South Africa should bear the losses.

Sir Julius Jeppe on the Outlook.

Sir Julius Jeppe's speech at the annual meeting of the South African Townships, Mining and Finance Corporation showed that he believes that out of our recent labour troubles good will ultimately come. The S.A.T.M. & F. Corporation has large and widely distributed interests, and its chairman is in a position to speak with authority and first-hand knowledge on the position. His confidence is all the more welcome this week, inasmuch as it tempers the depressing picture Sir Abe Bailey thought fit to present to Parliament in order to waken it to the danger of taxing the inland industries out of existence. A report of Sir Julius Jeppe's speech appears elsewhere in this issue, and in it he reviews in detail the manifold interests of the corporation. Practically all these have been adversely affected by the slump in values, but there is every reason to believe that an all round revival cannot now be far distant.

The Avalanche of Evidence.

Voluminous evidence has been given before the Mining Industry Board this week by the coal mining industry and by the V.F.P. on the subject of labour relations. As a prelude to the former the members of the Board visited Witbank last week, and made themselves familiar with the conditions there. They can hardly fail to have been impressed with the generous manner in which the coal mining companies treat their white employees, and the favourable conditions under which they live. All the leading lights in the coal industry appeared before the Commission in support of the lengthy written evidence put in, and the coal owners and the coal section of the Chamber of Mines were represented by Mr. John Roy and Mr. Alex. Aiken. We hope to print some extracts from the lengthily written statements in an early issue, as they form an important record of the history of the coal industry, and of the Coal Owners' Association. Mr. Brace seems to have considered that the industry should have made no further reduction in wages while the Commission was sitting, but it is difficult to follow his reasoning in this matter. Mr. Aiken showed the urgency of the need for action, and with the mass of plain facts and figures submitted to them the members of the Board can hardly fail to agree that the plight of the coal industry is indeed serious. Earlier in the week Mr. Bernard Price laid evidence before the Board on behalf of the V.F.P., and submitted to a cross-examination that must have clearly shown the Board in what a difficult position the power supply company was placed. The coal mines and the V.F.P. have profited by the breathing space since the cessation of the strike to prepare their evidence with great care and completeness, and the Board should find their task considerably lightened thereby.

Notes & News.

Crown Diamonds.

Particulars appeared in our last issue of the reconstruction of the Crown Diamond Mining and Exploration Company, Ltd. It will be seen from the published reports that the directors consider that the results obtained justify a vigorous policy in further exploring and opening up the western section of the mine, and in adopting the Consulting Engineer's recommendations to reconstruct and extend the plant to enable it to treat a minimum of 50,000 loads of blue ground monthly. A summary of the tests of the western section gives a total of 6,610 loads treated, yielding 870 carats of diamonds, or an average of 14·68 carats per 100 loads. In view of these results, the reconstruction seems bound to prove successful.

* * *

South Africa and U.S.A.

Trade conditions in the United States are more favourable than for many months, according to cable advice forwarded by the Department of Commerce at Washington to Mr. P. J. Stevenson, the American Trade Commissioner. From a local standpoint, imports into the United States from South Africa made a very favourable showing in April with a total of $1,600,000, which is 50 per cent. greater than the total for the first quarter in 1922 and almost equal to that for the last half of 1921. This large and unexpected increase in direct importations of South African products by the United States is very gratifying to those interested in trade relations between the two countries. On the other hand, American exports to the Union in April were $800,000, the lowest recorded for some time, reflecting probably the effects of the industrial disturbances of the first quarter. The important phases of the domestic business situation are all favourable. Railway freight rates have been reduced by ten per cent. as a result of wage reductions of twelve per cent., both coming into effect on July 1st. Prices of manufactured goods are reported as showing a downward tendency, while raw material prices are moving upward. Steel production is still on the increase as it has been since February. The industry is now operating on a basis of about 75 per cent. as compared with normal and 30 per cent. only a few months ago. It is significant that the Department of Commerce has made no comment on the strikes in the coal and textile industries. It may, therefore, be concluded that this situation is not serious and shows little change.

* * *

Future of the Nigel.

Moving the adoption of the report and accounts at the 33rd annual meeting of shareholders in the Nigel Gold Mining Company, at Pietermaritzburg, the chairman, Mr. Leonard Line, called attention to the amount derived from cleaning-up operations, which had resulted in a net profit of £1,208. Owing to all the readily available sands and materials having been treated the revenue from this source would now cease. The question of the scope of further operations had received earnest consideration, and the consulting engineer, Mr. Cazalet, had been asked to report on the position. After quoting from the report, the chairman said the directors had decided to follow the advice given, but this was a matter that must receive most careful consideration before any definite step was taken. The accumulative effect of the consideration so far was to suggest caution until more settled times and more stable conditions obtained. The policy of caution adopted in the past had been amply justified by results. The Board would keep a close watch on the progress of events, and shareholders could rest assured that they would be kept fully advised as to the intentions of the Board as soon as circumstances justify a forward movement.

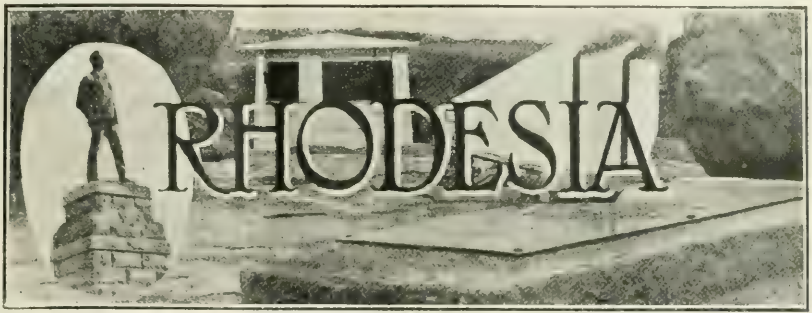
INVESTORS' DIARY.

Forthcoming Company Meetings.

(a) Annual general meeting; (s) special or extraordinary general meeting.

Meetings will be held in Johannesburg unless otherwise stated.

June 30.—Crown Diamonds (s), 12 noon.



RHODESIA G.M. AND INVESTMENT CO., LTD.

The Rhodesia Gold Mining and Investment Company made a profit of £11,903 in 1921, and the 9d. dividend (tax free) absorbs £11,250. Debtors and payments in advance, less reserve for doubtful debts, stand at £29,899; debentures in Rhodesia Native Labour Bureau (at cost), £250; loan at call against security, £60,100; bullion in transit, £2,536; and cash, £286—together, £91,071, against which sundry creditors figure for £2,618, leaving a balance of £88,453. This is equal to 5s. 10d. per Rhodesia Gold Mining share, now quoted at about 7s., cum the above dividend, so that 1s. 2d. per share, or £17,500, represents the market value of the company's mining property, plant, etc., as well as its share interests in Lonely, London and Rhodesia, and Mayo Rhodesia Development.

THE TRANS-ZAMBESIA RAILWAY.

The special illustrated section presented with "The Times" Trade Supplement commemorates the completion of an undertaking that cannot fail to exert a profound influence on the future of the central part of Portuguese East Africa, the British Protectorate of Nyasaland, and the eastern portion of the British South Africa Company's territory of Northern Rhodesia. The fact that a British Protectorate agreed to guarantee debenture interest and sinking fund contributions for a long period in connection with the Trans-Zambesia Railway, in spite of the fact that the entire length of the railway is in Portuguese territory, is in itself a sufficient indication of the far-reaching importance of the enterprise. It is also a happy example of Anglo-Portuguese co-operation in the development of South-East and South Central Africa. Ever since its organisation as a British Protectorate Nyasaland has suffered from its lack of a rapid means of access to the coast. The river route, via the Shire and the Zambesi, to the indifferent Zambesi mouth port of Chinde, has suffered a progressive deterioration during the present century. The head of navigation has gradually receded from Chiromo to Port Herald, and later to Chindio on the Zambesi itself. As the waters of the Shire fell, the need for a railway became even more apparent, and some 14 years ago the Shire Highlands Railway from Port Herald to Blantyre was completed. It was not long before the southward extension to Chindio—owned by the Central Africa Railway Company—became necessary. Even then the inadequacy of the river route to Chinde forced to the front the need for a direct rail connection with Beira, the nearest well-equipped ocean port.

REZENDE MINES.

A substantial interest in the Rezende Mines is held by the S.A. Townships, Mining and Finance Corporation, and at the annual meeting of the latter this week the Chairman, Sir Julius Jeppe, said the position on the Rezende is in every way satisfactory. During the last year 65,200 tons of ore were milled, which resulted in a profit of £67,113, which was carried to the profit and loss account, this figure being very similar to the previous year. There was some delay, due to a misunderstanding of the reading of the English law, in the contemplated increase of the capital to £150,000 by the issue of 30,000 £1 bonus shares, which issue will rank for dividend as from January 1, 1922. The necessary amount of £30,000 to increase the capital to the above figure was withdrawn from the amount standing to the credit of the "Bullion and Premium Reserve Account." 40 per cent. dividend was declared during the year, which, together with directors' remuneration, absorbed £50,000, leaving a balance of £50,254 to be carrie,d forward to the 1922 balance sheet. These figures will indicate the thoroughly sound financial basis of the company. With regard to the mine itself, the ore reserve position is satisfactory, amounting to 140,512 tons, with a value of 9.5 dwts. The circular shaft has been sunk to the eighth level, from which both the east and west drives have opened up payable values, and the general standard of width and values has been fully maintained. The development in the upper levels also continues satisfactory, and, generally speaking, from every point of view the underground conditions to-day at the mine have never looked better. On the "Streatham" the old shafts and adits have been put into working order: the main shaft has been dewatered, and driving west on the reef in the direction of the eastern section at Rezende has been started, and is showing good values. It is very important to push ahead with the work in this section of the property, in view of its possible connection with the Rezende eastern shoot. The milling plant and power plant have been thoroughly overhauled, and, with certain additions, have been placed in a very high state of efficiency. Taking everything into consideration, the future outlook is eminently satisfactory. In each of the years 1919, 1920, and 1921 a dividend of 40 per cent. was declared, and in addition, in 1921, 25 per cent. in fully paid shares was declared, and will, as I just stated, be distributed before the end of this year.

The Lonely Reef.

In the annual report of the Lonely Reef, a profit is disclosed of £133,700, against £178,600 for 1920. Two dividends have been paid totalling 6s. per share, as compared with 10s. for the previous year. The new gas producer plant is saving nearly £3,000 a month on costs and this will go a good way towards compensating for the recent setback in the price of gold. The ore reserves have been maintained at over three years ahead of the mill, but their average value has declined. It is anticipated that developments will now make more rapid progress as a result of the sinking of the new shaft. The consulting engineer writes: "The development of rich ore at the 24th level encourages the expectation of finding good ore at the 25th, and still deeper levels," yet to be started.

DEISTER PLAT-O

SAND AND SLIME

CONCENTRATING TABLES

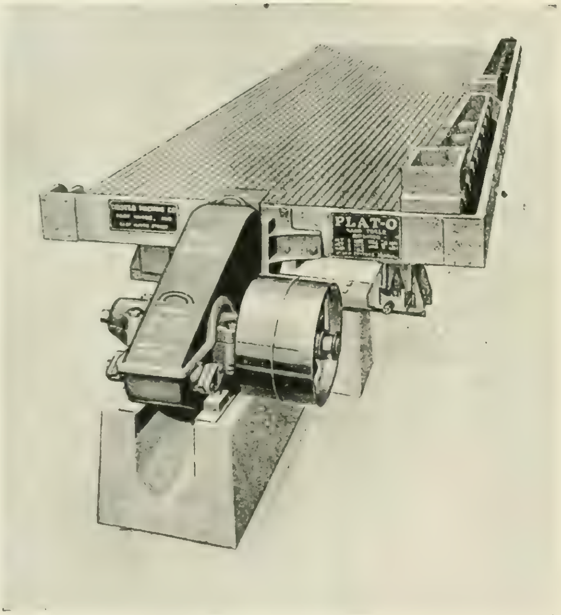
Write

for

Catalogues.

EFFICIENCY

EFFICIENCY



SOLE AGENTS:

SANDYCROFT, LTD.,
(Incorporated in Great Britain),
Stella Buildings, cor. Rissik & New Sts.,
JOHANNESBURG.
Telegrams: "SANCROFT." 'Phone 2794. P.O. Box 4453.

CHAS. E. G. CUMINGS,
3 and 4, Willoughby's Buildings. BULAWAYO.
Telegrams: "CUMINGS." 'Phone 12. P.O. Box 305.

BELGIAN CONGO.

Tanganyika Concessions Progress.

COPPER, TIN, COAL AND RARE MINERALS—THE BIG PLANS OF THE UNION MINIERE—WATER POWER AND RAILWAY DEVELOPMENTS.

The report of the directors of Tanganyika Concessions, Ltd., for the year to June 30, 1921, states that the period under review has been one of extreme difficulty in consequence of the crisis in the world's industries. Notwithstanding the severe depression which has prevailed in all industries the operations of the Union Miniere have been maintained when many of the world's large copper producers have had to reduce substantially their output. In spite of adverse conditions the Union Miniere has now reached a regular output of about 100 tons of copper a day, and with the carrying out of the programme for the treatment of low-grade ore the annual production will be increased step by step to over 100,000 tons, which will make it one of the most important of the world's enterprises.

Union Miniere.

The Union Minière report for 1920 shows that the whole of the credit balance on the profit and loss account, amounting to about 10,000,000 f., was written off to depreciation account; nevertheless, in view of the depression all over the world, and the general abnormal state of the metal markets, the results for that year must be considered satisfactory.

A new agreement had been entered into between the Special Katanga Committee and the Union Minière by which the latter's mineral concessions have been prolonged to March 11, 1990. The programme to be carried out by the Union Minière for the treatment of their low grade ores will necessitate an expenditure estimated at 300,000,000 f., which the agreement provides is to be raised partly by privileged shares and partly by debentures. The prolongation of the concession also involves the issue of 110,000 new capital shares and a similar number of dividend shares. Of these shares the Tanganyika Concessions, Ltd., had the right to take up 43,248 capital shares at the issued price of 400 f. each, and were also entitled to 20,000 dividend shares free.

The copper output of the Union Minière for 1921 averaged over 2,500 tons per month, and for the last few months has averaged nearly 3,000 tons. For the last eight years the output was: 1914, 10,722 tons; 1915, 14,042 tons; 1916, 22,167 tons; 1917, 27,462 tons; 1918, 20,238 tons; 1919, 23,004 tons; 1920, 18,962 tons; 1921, 30,470 tons.

It will be seen that the output has steadily increased (apart from 1920), and a record production for 1921 has been achieved. The full furnace capacity of the Union Minière smelter is about 40,000 tons per annum. The erection of the concentrator for the mechanical enrichment of medium grade ores is now complete. This plant, which has an estimated treatment capacity of 4,000 tons of ore per day, has been running at part capacity since July last. So far the results have been quite satisfactory, and have had a beneficial effect on the copper output [illegible].

Electro-Leaching Test Plant.

The construction of this plant has now been completed, and it started running in the middle of November. The first trials have shown entirely satisfactory results, and confirm that the leaching process is the most suitable method for treating the low grade ores of Katanga.

Tin Production.

The Union Minière's output of cassiterite is steadily improving. Over 50 tons per month are being produced, and it is expected that this will shortly be increased to about 80 tons per month. Up to the end of November last 944 tons of cassiterite have been extracted, of which about 430 tons have been shipped to Europe.

Western Copper Mines and Ruwe Gold Mine.

In anticipation of the extension of the Benguella Railway to the Western Mines active prospecting and development have been carried out at these mines, and extensive drilling operations are in progress. The further investigation of the Ruwe gold and platinum deposit it also to be taken up, with a view to the economic exploitation of this deposit being carried out when the railway arrives.

Sankishia Coal Deposit.

The investigation of this deposit has been actively carried on in conjunction with the Bas Congo Railway Co., and about 15,000,000 tons of coal have already been proved. A colliery company is being organised to work this deposit, and a production is expected during 1922 of 300 tons per day, to be increased gradually to 800 tons per day.

Cobalt and Uranium.

The Union Minière cobalt ores are now undergoing detailed tests in order to determine the best means of economically exploiting these ores. The investigation of the rich uranium deposits which have been discovered in some of the Union Minière mines has given gratifying results, and arrangements have been made to erect a plant for the extraction of radium on an industrial scale. This plant is expected to begin producing radium before the end of 1922.

Copper Ore Reserves.

In ten mines of the Eastern group, on which detail work has been carried out, the estimated ore reserves on January 1, 1922, were 49,006,000 tons of ore, carrying 2,830,000 tons of copper. The result of the extensive drilling operations and development work now in progress on the various mines of this copper belt is to continuously extend these ore reserves.

Water Power Resources.

The detailed investigations in connection with the resources of water power are now approaching completion, and the preliminary reports indicate that the possibilities of large and cheap power development are much more favourable than had hitherto been expected. It is proposed to commence with the exploitation of the Lufira Falls, which are only about 60 miles from the Panda works.

Benguella Railway.

Shareholders will recollect it has been often pointed out that the object of the Benguella Railway is to link up the Union Minière copper industry to the sea by the shortest and most economical route. From the Union Minière reports referred to above it will be seen that it is now recognised that the completion of the Benguella Railway is an essential part of the programme which is carried out for in-

[illegible] the copper [illegible]. The Benguella Railway report for 1921, which has been recently issued, shows that the gross receipts for the last five years from local traffic have increased year by year as follows:—1917, escudos 651,697; 1918, escudos 878,122; 1919, escudos 1,014,290; 1920, escudos 2,179,000; 1921, escudos 5,663,000; 1922 (first three months), escudos 1,243,000.

The annual report states that traffic has continued to develop considerably, all stations going to show the activity and energy being exerted to make Angola yield the wealth it is capable of producing. Negotiations for the necessary finance to complete and equip the line to the frontier have been carried on for several months, and it is hoped that they will be satisfactorily concluded very shortly.

Increase of Capital.

It is necessary to arrange for further funds for the general purposes of the company, and in particular to provide the necessary funds to enable the company to take up its proportion of the new Union Minière shares referred to above.

It is now proposed to create 1,300,000 new shares of £1 each, and to offer 750,000 of these shares to the shareholders as 10 per cent. preference shares, convertible into ordinary shares at 22s. for five years, which issue has been underwritten, subject to the passing of the resolutions at the extraordinary general meeting.

EX-ENEMY SHAREHOLDINGS.

Announcements regarding the ex-enemy shareholdings follow each other in quick succession. The most important deal with the Custodian was the purchase of 137,861 New Modder shares at 66s. 3d. by the Central Mining and Investment Corporation, Ltd. Shareholders in the New Modder have been offered at the purchase price one share for every five held by them. The Central Mining and Investment Corporation also acquired 50,896 shares in the Modder "B" at 27s. per share. Shareholders in the latter company are being offered one share at the same price for every twelve shares now held. At the Rose Deep meeting held during the week it was announced that 36,000 shares at 9s. 9d. each had been acquired from the Custodian by the Central Mining people, and that they would be taken over by the Geldenhuis Deep at the same price, plus 5 per cent., and cancelled. The Village Deep and Geldenhuis Deep purpose to do likewise with respectively 55,000 shares at 5s. and 20,000 shares at 3s. acquired through the same agency. It may be recalled that in April, 1919, the Geduld Company purchased from the Custodian of Enemy Property for the Union of South Africa, at £2 per share, approximately 250,000 shares, and in June, 1919, shareholders were invited to subscribe for these (less 85,185 which were retained by the company for dividend purposes) at the same price in the proportion of two for every eleven shares held, the issue being guaranteed by the Union Corporation, Ltd., for a cash commission of 5 per cent. Last week the company announced that it had acquired the remaining 72,861 shares at £2 10s. per share, and offered them to shareholders at the same price. The Modder Deep Levels in May, 1919, purchased from the Custodian of Enemy Property in South Africa 70,000 shares vested in the Custodian at £6 12s. 6d. each (this was before the shares were split), and the following month 46,190 were offered to shareholders at the same price, the issue being guaranteed by the Union Corporation, Ltd., for a commission of 5 per cent. The balance, viz., 23,810 was distributed as part of next dividend. The shares were sub-divided in August, 1919. Last week the company announced that it had acquired the remaining 50,017 shares in the company at £2 per share, and offered them to the shareholders at the same price. The Consolidated Mines Selection, Rand Selection, has completed a deal with the Custodian for the purchase of the ex-enemy shares of its associated companies, and announcements in regard to them will doubtless be made in due course.

The Cyanide Process.

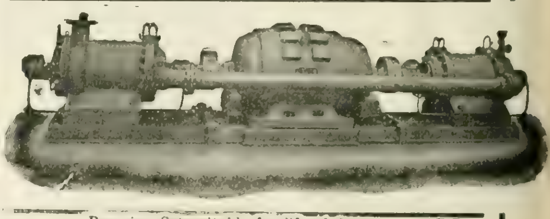
The following paragraph reprinted from the *Klerksdorp Record* of June 18th, 1890, revives old memories. "The report of the first test of MacArthur-Forrest process of extracting gold from ore at the Salisbury mine is to hand, and shews an average extraction of 84 per cent., which was, however, much higher in the latter tests; some errors in earlier tests having pulled down the average. The cost was stated to be about 25s. per ton."

* * *

The Gold "Premium."

Interesting light is thrown on the course of the gold "premium" by the following particulars furnished by the London office of the B.S.A. Company, viz.: "Throughout the quarter ended March 31 prices remained comparatively steady with but few fluctuations of any magnitude, but the level of values was considerably lower than in previous quarters. On 3rd January the price was 97s. 9d. per ounce fine, and throughout the month it never rose above 98s. nor fell below 97s., at which figure it closed at at the end of the month. In February it fluctuated between 96s. 3d. and 93s. 6d., closing at the latter figure. In March it touched 96s. 4d. and finished at 95s. 3d. Since 31st March it has fallen again to 93s. 5d. Owing to the strike in the Transvaal the quantities of gold dealt with by Messrs. Rothschild & Sons decreased very materially. During the early part of the quarter most of the gold was taken on New York account, but increasing quantities were realised for Indian account, and during the last few weeks practically all the limited quantities available have been taken for that destination."

SULZER
HIGH-LIFT CENTRIFUGAL
PUMPS.
For Mine Drainage, Waterworks, Etc.



Pumping Set suitable for lift of 2,500 ft.

LARGE LOCAL STOCKS IN
MEDIUM AND LOW-LIFT PUMPS.

For particulars apply to:
RICE, WILSON & HERD,
86, 87, 88, 96, Standard Bank Chambers, Commissioner St.
P.O. Box 930 Telephones 2299 & 2300. JOHANNESBURG.
Also South African Agents for
CALLENDER'S CABLE & CONSTRUCTION CO., LTD.
BRITISH THOMSON-HOUSTON CO., LTD., etc., etc.

The Week in the Sharemarket.

EX-ENEMY SHARE SETTLEMENT—DIAMOND REVIVAL—DIVIDEND FORECAST.

Under the financial pressure caused by the amount of money required for the purchase of ex-enemy shares, the market has continued remarkably firm, in fact only a slight easing of prices has been noticeable, which, we think, augurs well for the future of our market. Payment has to be made for "rights" not later than the 14th inst., and when this transaction is completed we think we may look for a more settled market. Advices from London have again been very optimistic regarding the diamond market, though beyond increasing dealings in Consolidated Diamonds the firm market overseas has had little effect on other local diamond concerns. The gold output returns for May must be looked upon as generally satisfactory, particularly the drop of roughly 2s. per ton in working costs. We hope to see a further reduction in the June returns. It is reasonable to expect, as regards dividends, that the leaders may announce declarations amounting to about 50 per cent. of the December figures. We trust we shall not be disappointed in this forecast.

	Fri. 2nd.	Sat. 3rd.	Mon. 5th.	Tues. 6th.	Wed. 7th.	Thurs. 8th.
Anglo Amer. Corp.	22 3	21 6	21 3	21 0*	21 9	21 3
Apex Mines	—	6 8*	6 9*	6 9*	6 9*	6 9*
Aurora Wests	4 6*	4 0*		4 0*	4 0*	
Bantjes Cons.	6 1½*	6 2	6 0*			—
Brakpan Mines	46 0*	47 0*	47 0*	47 6*	48 0*	48 6
Bushveld Tins		0 1*	0 3*			0 3*
Cinderella Cons.	2 4*	2 4*	2 4*	2 4*	2 4*	2 4*
City and Subs.	2 3*	2 3*	2 0*	2 2*		
City Deeps	44 6*	44 0*	44 0*	44 0*	44 0*	44 0
Con. Diamonds	16 9	16 1½	16 3	16 1½	16 6	16 3
Con. Main Reefs	11 0*	10 10½	10 9*	10 9*	10 6*	10 9
Con. Mines Selection	13 0*	13 0*	13 0*	13 0*	13 0*	13 0*
Coronation Freeholds	1 0†	0 11†	0 10*	1 1†	1 0†	1 0†
Do. Syndicates	4 7*	4 9	—	4 3*	4 3*	4 3*
Crown Diamonds	6 6	6 0*	5 11	5 10*	5 10*	5 10*
Crown Mines	38 3*	38 6	38 9†	—	39 3†	38 0
Daggafontein Mines	3 0*	—	—	3 0†	2 9*	2 10*
E.R. Coals	1 6*	1 6*	1 6*	1 6*	1 6*	1 6*
E.R. Deeps	0 9*	0 9*	0 9*	0 9*	0 9*	0 9*
E.R. Props.	6 6*	7 0†			6 0*	6 0*
E.R. Debentures		£85*	£85*			
Eastern Golds	0 7*	0 7*		0 7*	0 8†	0 6*
Ferreira Deeps			9 0†	7 6		
Frank Smith Dmds.	3 11*	3 8	3 9*	3 9*	3 10*	3 9*
Geduld Props.	59 0	58 0*	58 6	58 6*	58 9*	58 0*
Glynn's Lydenburgs	14 0*	15 0	13 6*	16 0	16 0*	16 0*
Govt. Areas	88 0*	87 6	87 6*	87 6	89 0	88 6†
Hume Pipes	15 0	15 0*	15 6*	16 0*		
Knight Centrals	3 11	3 11*	3 11	3 9*	3 10*	3 11*
Lace Props.	7 6*	8 0*	7 9*	7 9*	8 0*	7 9*
Leeuwpoort Tins	6 6†	6 3	6 3	6 3	6 0*	
Luipaardsvlei Est.	2 6	—				
Lydenburg Farms	5 1*		5 3*	5 3*	5 3*	5 3*
Meyer & Charltons	70 0*			70 0*		
Middelvlei Estates		1 9†	1 3*	1 9†	1 9†	
Modder B.'s	31 6	30 6*	31 6	31 0*	31 9*	31 0
Modder Deeps	43 6	43 3*	43 6	43 0*	43 6	43 9*
Modder Easts	8 1½	8 0*	8 0*	8 0*	7 9*	7 9*
Natal Navig. Colls.	31 9*	32 0	31 9*	31 6*		32 0*
National Banks	210 0*	212 6*	205 0*			215 0*
New Eland Dmds.	28 6*		27 6*			30 0†
New Era Cons.	6 0*		6 3		6 3*	6 9*
New Geduld Deeps	1 6*	1 6*				1 6*
New Kleinfonteins	6 0*		6 6*	6 0*	6 0*	6 0*
New Modders	75 0*	74 3*	74 9	74 0*	74 6†	73 0
New Primrose	4 6*					
New Unifieds	3 6*					
New State Areas	32 6	31 9	31 9	31 9	31 9	31 6
Nigels	5 0*	5 0*	5 0	5 0*		5 0*
Nourse Mines	13 10*	13 0*	13 6*	13 9*	14 0*	14 9
Pretoria Cements	14 6*	14 0	15 3	14 6*	15 0*	15 0*
Rand Collieries				0 9*	0 9*	
Rand Nucleus	1 1*	1 1*	1 1*	1 1*		
Randfontein Centrals				10 3*		
Do. Estates	17 3	16 9	16 10*	17 0*	17 3	16 9*
Rouxville Dmds.	1 6	1 6	1 9*	1 3	1 4	1 5
Roberts Victors	7 10*		7 10*	8 0*	8 0*	8 0*
Rooibergs	3 0*	3 0	3 0*	3 0*	3 0*	3 1*
Ryan Nigels	3 0*	3 0*	3 0*	3 0*	3 0*	4 0†
Simmer and Jacks	3 0*	3 0*	3 1*	3 2*	3 2*	3 2
S.A. Lands	4 3*	4 3*	4 2*	4 3*	4 2*	4 2*
Springs Mines	45 3*	44 6*	44 6	44 9*	44 6	44 6*
Sub-Nigels	11 9*		12 6*	12 3†	—	12 3†
Swaziland Tins	10 0†					
S.A. Alkali		—	15 0†		16 0†	
S.A. Townships	9 3*	9 0*	9 3*	9 0*	9 0†	9 0*
Transvaal Lands		—	18 0†			
Trans. G.M. Estates	12 9	12 3*	12 6	12 3	12 6	
Transvaal Silvers	11 0*	13 6	12 9*	13 0*	14 3	14 3*
Tudors	0 8†		0 6*		0 8†	0 8*
Van Dyks		0 11	1 0†			
Van Ryn Deeps	68 0	67 0*	67 0	67 0*	68 6*	68 0*
Village Deeps		11 0†	11 0	11 0*	11 0*	
West Springs	10 6	10 3*	10 1	9 9*	10 3	9 9
West Rand Cons.	4 6*	4 6*	4 3*		4 9*	
Western Rand Est.	4 0*	3 11*	3 10*	3 10*	3 10*	3 1*
Witbank Colls.	39 6*		39 6*	39 6*	39 6*	
Witwatersrands		13 6		13 0*		14 0
Wit. Deeps	8 3*		8 6*			
Zaaiplaats Tins	2 1*	2 1*	2 1*	2 1*	2 3*	2 1*
Union 5 per cent.	£101	£101*	£101¼*	£101	£101	£100½

*** Buyers. † Sellers. a. Odd lots. b. Ex London.**

Transvaal Silver and Base Metals, Ltd.

The output of this Company for May totalled 400.8 long tons of lead bullion, containing 39,517½ oz. of fine silver, representing a total value, at to-day's prices of the metals, of approximately £15,818.

* * *

Discoverers' rights over 167 claims on the farm Grootfontein have been granted to the New Consolidated Goldfields, Ltd.

OSBORN'S
STEEL PRODUCTS.
THE VERY NAME
OSBORN
GIVES THE
IMPRESSION OF
HIGH GRADE
MATERIAL.
A PRODUCT
OF QUALITY.

We Solicit Your Enquiries.

SAMUEL OSBORN
(S.A.), LTD.
'Phone 4673 Box 3162
JOHANNESBURG.
WORKS: . . CLYDE STEEL WORKS, SHEFFIELD.

Letters to the Editor.

THE AMSTERDAM CONGLOMERATES.

To the Editor, S.A. Mining and Engineering Journal.

Sir,—[illegible] published [illegible] Amsterdam con- [illegible] of the L[illegible] geologists [illegible] which [illegible] Witwatersrand age than the Black Reef series of the Black Reef age [illegible] with the [illegible] Central Rand. In Nature there is a place for everything, and everything in its place, hence the wordy fights I have with certain well-known geologists—well-known for the mistakes they have made, and still continue to make, in this most important branch of geology, "stratigraphy." It is also well known that no two of these worthy gentlemen agree on the subject, for lack of observatory powers possibly. Some, I am convinced, are colour blind, others are obsessed with the idea that the knowledge they possess of the Northern Hemisphere, where they passed their technical exams, is a sort of "open sesame" to all geology pertaining to the Southern. No such thing! We have a geology of our own here, and it must be evident even to the layman, that blessed as we are with three five-mile-[illegible] of the world, that these must be given special study in the field, and only by years of hard graft, on foot and horseback, can anyone partially master their stratigraphy.

My first acquaintance with the Lydenburg conglomerates was in 1886, on my way to the Barberton gold fields, as the road thereto crossed them twice or thrice, and as time was no object I did not fail to examine them carefully and remember their characteristics, which observation has stood me in good stead ever since, in the Cape Colony, Northern Transvaal, Lydenburg, Swaziland, and Zululand, where the lower beds of the age are better developed and promise better gold contents than anywhere else—*vide* Denny, Daulton, etc.

No one begrudges Amsterdam its conglomerates, or the values either, but what I do object to is the semblance of an attempt to link them up with the Rand and possibly pass them on to a confiding public as Main Reef series, in the same way as Black Reef series of the Far East Rand has been made to do duty for it also, although it lies many fathoms "daar onner," as the Dutch say, and will come in some day as a surprise packet to shareholders, when the managements have worked out the more or less horizontal beds above.

Apropos of the Lydenburg conglomerates, we have to thank Dr. Molengraaf for dubbing them Black Reef series, a misnomer which has been perpetuated by the Geological Survey, and all other geologists who blindly take their tune from it. Now that the worthy doctor has returned to this country for a while, it is to be hoped he will take the opportunity of correcting this unpardonable stratigraphical mistake, as it has [illegible] Black Reef [illegible] which, in my opinion, is fast taking premier place as the Rand's gold producer, and has yet another 30,000 square miles of the same brand of reefs to pull and haul on. When anyone talks of our gold mining industry as a "vanishing industry," I feel sorry for them, and pity their lack of geological knowledge.—Yours, etc.,

SCOTT ALEXANDER
"Rand Stratigraphist."

Johannesburg,
June 4th, 1922.

HEIDELBERG GOLD REEFS.

30 Miles of Main Reef Outcrop?

To the Editor, *S.A. Mining and Engineering Journal.*

Sir,—It is not my intention to deal any further with the geology of the Heidelberg District, as it must be apparent to the ordinary layman that the evidence produced in my previous letters proves that the true horizon of the Main Reef series has been definitely established by the Government Geologist and all the other recognised authorities whom I have already mentioned. I venture to suggest that action to re-establish confidence in the district should be directed towards urging the Government to proclaim the farms on which the Main Reef series outcrops and thus prevent the locking up of known mining areas, which is inimical to the interests of the country. From my experience of those fields during the last 12 years, I can prove that there is a stretch of 30 miles of Main Reef outcrop propositions in the district, and this has been confirmed by the Geological survey recently completed. Every farm containing the outcrop of the Main Reef from Springs to Heidelberg is owned by the big mining groups, and with one exception, viz., the New Consolidated Gold Fields at the Sub-Nigel Mine, no work is being done by any of them on this line of country. In this 30 miles stretch it is only to be expected that poor zones will be found as on the Rand, but from evidence in my possession I can prove there is every probability of rich zones being encountered. Notwithstanding the adverse opinion held regarding the district, it is curious that the only mine working at present, the Sub-Nigel, produced in December last in mill and cyanide 11.8 dwts. per ton, a result which is only exceeded by one mine on the Rand, viz., the Meyer and Charlton. Working costs are no doubt higher, but this to a certain extent is due to lack of cheaper transport by road and rail, and other difficulties which will in course of time be overcome. As I previously stated, iniquitous option moneys and purchase prices of minerals demanded by the owners also militate against the interests of the district, but by the proclaiming of the farms and subsequent leasing for mining, capital would be more readily forthcoming. The inaction of the Government in not proclaiming the Main Reef outcrop farms is not only detrimental to the district, but to the whole country. As already mentioned, the right to mine for precious metals belongs to the State. Section 123 of the Precious and Base Metals Act states: "Whenever it shall appear expedient in the public interest, the Governor-General may by proclamation in the *Government Gazette*, declare any land adjoining, enclosed by, or situate in the neighbourhood of proclaimed land to be a portion of a proclaimed gold field." Surely the present time is expedient. Hundreds of unemployed capable miners are tramping the country looking for work, and if the owners of the locked-up mineral areas will not work their ground in the interests of the community the Government should exercise the powers conferred upon them according to the Acts mentioned. The necessity of the building of the Railway line from Springs to Heidelberg and thence to Vereeniging should also be brought again to the notice of the Government, as this line is very material to the interests of farmers as well as to the mining portion of the community.—I am, etc.,

JOHN MOFFAT.

Elevator Foundation Troubles.

It is said that great difficulty has been found in the laying of the foundation floor of the new grain elevator at Durban, and it is likely that a new site for the second half of the elevator will have to be surveyed, and the work of excavation begun all over again. Several of the staff of the contractors have had notice of the termination of their services, and the job may be held up for a couple of months. This may mean that the contractors will concentrate their energies on Capetown, where the elevator may be the first one in the country to be finished.

ENGINEERING SECTION.

The Control of Electricity Supply.

THE CONTROL OF ELECTRICITY SUPPLY—MUNICIPAL OBJECTIONS TO NEW BILL—SIR ROBERT KOTZE'S VIEWS.

The new Electricity Bill has been relegated to the care of a Select Committee, and evidence is now being taken at Capetown. Last week a deputation of the Johannesburg Town Council and the Town Electrical Engineer left for Capetown to give evidence in regard to certain provisions in the Bill. The main points raised by the deputation were: (1) That Johannesburg should not be placed as regards its electric power at the mercy of a Board which may consist entirely of railway officials; (2) it is laid down in the Bill that no one may extend existing plant by 10 per cent. over its present capacity without sanction of the Board. The Bill is admitted to be a considerable improvement on that submitted last year, and it is hoped that as a result of the representations of this and other Union municipalities which are following Johannesburg's lead, the Bill will be amended so as to guard against defects which would undoubtedly interfere with its successful working, and place Johannesburg at a great disadvantage, despite the fact that it has spent something like £1,500,000 on the purchase of plant for electrical power supply.

Last week we quoted Mr. Bernard Price's views on certain aspects of the Bill, and it may be only fair to quote those of the Government Mining Engineer, Sir Robert Kotzé, in favour of the principle underlying the Bill. Writing in the *Railway Magazine* a few weeks ago, Sir Robert Kotzé said, *inter alia*:—

The writer will indicate a scheme which he himself favours as the one most likely to avoid the difficulties which have been raised, while retaining substantial advantages. It is that of the Government appointing a public supply board, consisting of a few men who have proved their worth in the business world. Such a board would have power, with the approval of the Government, to raise moneys and to negotiate loans for the purpose of their undertakings, on the security, practically, of their consumers, who, in this case, will consist in the beginning mainly of the railways. The board would establish the undertakings and adjust its charges for current so as to make neither a profit nor a loss. If it made a profit in one year, that profit would not be distributed, as in the case of a private company, amongst shareholders, but would be appropriated towards a reduction of rates in the next year.

Under these conditions it may be expected that the board will succeed in raising its capital at rates of interest at least as low as first-class municipalities. The item of interest and amortisation should therefore be reduced to a fairly low figure in the price for current. Efficiency, again, should not suffer as compared to a private company. There is no reason why the board itself should not be as efficient as any board of directors running a private concern. It is true the money they control would not be their own money, but of how many well run large concerns is that the case to-day? The spur to the performance of efficient services would be, as in private life, the payment of a sufficient salary and the prospect of continued employment, either in the same or in another business, as the result of building up and establishing a sound reputation as a capable and trustworthy business man. The undertaking itself would be run much in the same way as a private business, and in particular there would be nothing of the civil service atmosphere among its employees. If a servant of the board proved inefficient, he would suffer the penalties therefor which private employ awards, without being able to shelter behind the cast-iron rules which protect the inefficient civil servant and make him more and more inefficient as the years roll by.

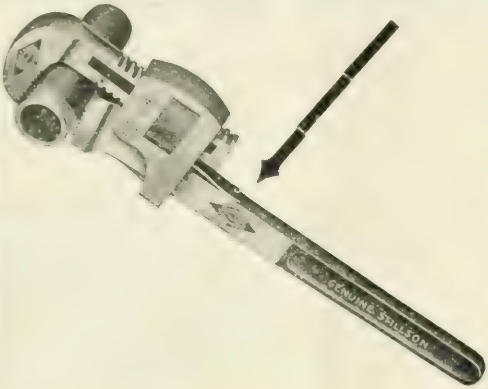
The Canadian Example.

Everything, of course, depends on the selection of the right men for the board. If they are appointed because of political or social influence, the scheme would be doomed to failure at its commencement, but, given wise selection, there is no reason why it should not be a complete success.

The Hydro-Electric Commission of Ontario, Canada, is a body constituted very much on the lines advocated above. It consists of three members, one of whom is a Minister of the Provincial Government. This Commission was constituted in 1912, and has had a very successful history. It now controls hydro-electric undertakings with a total capital value exceeding £20,000,000, including generating stations on the Niagara Falls, and has not only reduced the cost of electric power to a figure far below that previously charged by private undertakers, but is year by year still further reducing it. The total energy now is over 300,000 h.p., and the Commission is commencing the erection of further plant which will bring the ultimate capacity to 1,400,000 h.p. Its supply system already includes 181 municipalities of all sizes, and current is delivered from Niagara Falls as far as Windsor, a distance of 250 miles. These remarkable achievements have aroused world-wide interest in the Commission's doings and it is being copied as a model in other parts of Canada and in the United States.

The Ontario Commission obtains its funds by direct vote from the Provincial Parliament and is thus subject to Ministerial and Parliamentary control. There is a great deal to be said for this method of finance and control, but on the whole the writer is inclined to think that it would be better in South Africa to remove the Commission or Board from such direct Parliamentary control as would follow if all the money required had to be voted by Parliament. As advocated above, the board would be subject to the control of the Government, for the reason that the appointments and the renewal of appointments of members of the board and the power of dismissal for misconduct will rest in the Government's hands. Moreover, before the board can raise moneys for any scheme, it has to obtain the approval of the Government. Inasmuch as the Government is responsible to Parliament it is in a sense also responsible for the acts of the board, but the control of Parliament is somewhat more remote than if the moneys

Is Dan Stillson's own mark on your Wrench?



The most famous tool in the world was invented by Dan Stillson in the Walworth plant 53 years ago. It has been imitated many times. It has never been improved upon by anybody, not even by ourselves, and it has never been displaced in the confidence and affections of mechanics everywhere.

We are to-day supplying new parts for Walworth Stillson Wrenches made 40 years ago. And these parts will fit the Walworth Stillson Wrenches we make 40 years hence.

A Walworth Stillson is as finely manufactured as any tool in the world. Every part is made of the best tool steel. The jaw and bar are drop-forged and skilfully heat-treated to give strength and toughness, and hardness without brittleness.

And if any further guarantee of quality be asked, we can point to over 50 years of service behind the Genuine Walworth Stillson Wrench.

Be sure that the Wrench you buy has the Diamond on it.

WALWORTH

Walworth
Manufacturing Co.
Boston, U.S.A.

Walworth
International Co.
New York, U.S.A.

Valves, Fittings, Tools
for Steam, Water,
Gas, Oil and Air.

Foreign Representatives:
P.O. Box 3662,
Johannesburg.

SHOCK TOOLS

SHOCK Tools have always been the tool-makers' greatest problem—how to avoid the "weak spot"—how to combine extreme toughness and hardness—how to avoid crystallisation in working.

"PAX" NONBREAK BRAND

—the result of many years' experiment—comes very near perfection in the solving of these problems.

Primarily made as an unbreakable chisel steel, it has now been tested with results of uniform excellence for: Rivet Sets, Punches, Snaps and Pneumatic Tools generally, Mining Drills, Machine Chisels and Cold Sates, and has proved itself a steel that will stand punishment in the heaviest degree.

Being oil-hardening it does not run or twist under treatment.

Tested in the "S.B.N." Works on pneumatic chipping of high-speed steel ingots—a test chisel (as illustrated) has been subsequently driven clean through a block of mild-steel and then, without dressing, taken back on to chipping cast iron and cast steel ingots.

When correctly hardened—the working edge is hard to the file test, but will not chip or break.

The first cost is naturally higher than standard qualities, but its durability and freedom from breakage make it a cheap steel in practice.

There are doubtless some tool jobs that give you trouble—try "Pax" Nonbreak Brand as a cure.

"Pax" Nonbreak Steel is manufactured by

SANDERSON BROS. & NEWBOULD, LTD.,
SHEFFIELD.

Sole Agents for South Africa:

BARTLE & CO., LTD.,
LOVEDAY HOUSE. P.O. Box 2466. Phone 3553. Wires "Faggot."
JOHANNESBURG.
And at KIMBERLEY and DURBAN.

to be raised were to be subject to Parliamentary approval. It is possible that the board may sometimes fail in its efforts to raise money required for any undertaking by the issue of stock or debentures, but this should be only a temporary difficulty which could be tided over by giving it powers to borrow from the Government or elsewhere, subject to the consent of the Government.

On its appointment the board will find itself committed to the taking over of such plant, etc., as the South African Railways and Harbours may have already acquired for the purpose of making a commencement with its electrification scheme, and will also need funds for the expenditure it must incur before it can raise its own funds. An initial loan will thus obviously be necessary.

Board's Position.

The board's relation to other undertakers should be that of an equal, that is to say, it should not be granted powers over them or be permitted to encroach on their authority or privileges. In its somewhat unique position it should, however, in course of time become a bulk supplier of current to municipalities and other public authorities which would ordinarily generate current for themselves, and since its field is the whole of the Union, it may be able to initiate and establish undertakings which no other public authority could tackle for want of legal powers, and which private enterprise could not embark upon for want of capital or other disadvantages.

It would also be useful to have the advice of the board and its technical staff on such more or less public matters as the proposal of a municipality to establish an electric plant or to increase it. This might be conveniently arranged by providing that when the municipality seeks the consent of the Administrator for any expenditure on these subjects, it should present the report of the board on its proposals. It may well be the case that the views of the municipality differ from those of the board, but the Administrator and ratepayers will at all events have the benefit of the advice of a thoroughly qualified, and generally impartial, authority and be able to decide with full knowledge of the case.

As the sphere of operations of the board increases, it may in time become desirable to grant it even wider powers and functions than those indicated, but this should not be done at the beginning. It will not be prudent to place too much power at once in the hands of an authority as yet untried and to curtail, perhaps unnecessarily, the rights of other authorities which now have certain statutory powers and privileges and which will certainly oppose any undue encroachment on their preserves. It would be as well to let the situation develop itself and to legislate when the necessity arises. Fortunately for South Africa, it is not in the position of Great Britain, where the confusion created by the establishment of numberless electric plants under a host of different public and private undertakings is so great that the attempts at co-ordination and unification are proving exceptionally difficult. We still have an almost clean slate to write upon and can afford to hasten slowly, so long as we take care to make no false steps. There is certainly no need to antagonise any interests at the present stage.

Control of Electricity Supply.

In addition to supply, the control of such supply has also to be regulated by legislative action. The "supply" board referred to above will not be empowered to have control over any but its own undertakings, so that means have to be devised to secure the customers of other undertakers against the possibility of these undertakers abusing their practical monopoly by, for example, putting up prices against them. The statute can in the nature of things only lay down general principles for preventing such abuses, but the circumstances determining such a matter as the price to be charged for current will generally be different for each undertaking. It thus becomes necessary to set up some authority which will apply the general principles of the statute. In the Transvaal Power Act, the device was adopted of setting up a controlling authority called the Power Undertakings Board and of requiring each undertaking to take out a licence, the terms of which have to be scrutinised and approved by this board. This device has worked well and should be adopted for the future also. Since the "control" board has frequently to adjudicate between the claims of contending parties, it has to be strictly impartial, and the Transvaal Board has for this reason been constituted of Government officials only. It should be appointed by the Governor-General and be under the control of a Minister, and provision should be made that anyone can appeal from a decision of the board to the Minister.

Mining Men and Matters.

His many friends are welcoming back Mr. W. P. Taylor after his lengthy illness and convalescence.

* * *

Mr. E. R. Schoch, of the Anglo-French Exploration Co., Ltd., has returned from a professional visit to the South-West African Protectorate.

* * *

Mr. F. F. Pienaar, O.B.E., has been appointed Acting Chairman of the Miners' Phthisis Board, during the absence at any time of Mr. Herbert Hamil, Chairman of the Board.

* * *

The annual congress of the South African Association for the Advancement of Science is opening at Lourenco Marques, on Monday, July 10, and will last for a week, though no doubt many of the delegates will stay longer.

* * *

With deep regret we have to record the death of Mr. James Beatty, sen., which took place last Saturday. The late Mr. Beatty was one of the oldest and most popular business men on the Rand, and his three sons are all well-known in the mining world. His son, Mr. George Beatty, is the general manager of the Randfontein Mines.

* * *

Mr. Harry Denny, C.B.E., and a pioneer consulting engineer of the Rand, arrived at Mossamedes, Southern Angola, in mail week, and has left for an inspection tour in the mineral belt of that great Portuguese West African Colony. His brother, Mr. George Denny, is interested in the gold, asbestos and chrome proposition of Southern Rhodesia, and is paying a lengthy visit to Bulawayo.

* * *

Mr. J. L. Siddall—for many years secretary and now manager of the Central Mining and Investment Corporation, Ltd.—is being welcomed back on a three years' sojourn on the Rand. Mr. Siddall, who has for nearly twenty-five years been connected with the premier South African house, arrived by the R.M.S. "Kinfauns Castle," and was seen off at Waterloo by Sir Lionel Phillips and many other friends. Before leaving, Mr. Siddall expressed his regret at leaving London in some respects, but was very optimistic as to the industrial outlook in South Africa, and hopeful of co-operating in the coming great developments of the sub-Continent.

* * *

Mr. G. Shapter Robinson, late of Vickers, has come out to take over the works management of Messrs. Christopher and Shillito, Ltd., the well-known engineers and founders.

* * *

The heartiest congratulations of the whole mining community goes out to Sir Julius Jeppe, C.B.E., on the honour conferred on him by H.M. the King. Sir Julius has not only been one of the pioneers of the Rand but he has also pioneered and participated in every good cause and public movement for the benefit of this community. His devoted services to the Johannesburg Hospital, to the Governor-General's Fund, and to other public institutions are known to all, and it is not too much to say that the whole community is gratified at the honour bestowed upon him. To Sir Llewellyn Andersson also, who did such splendid work in organising and commanding the Civic Guard, and in the Great War, we offer our congratulations on his well-merited distinction.

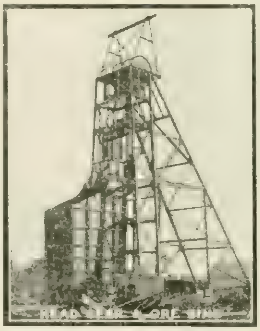
HEAD, WRIGHTSON & CO. (South Africa), LTD.

P.O. Box 1034. JOHANNESBURG. Telephone 3524.

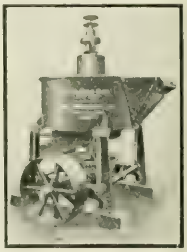
Mining Machinery, Colliery & Blast Furnace Plants, Structural Steelwork, etc., etc.

A few of our Specialities:—

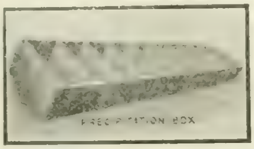
TUBE MILLS.



HEAD GEARS AND BINS.



GRINDING PANS.



PRECIPITATION BOXES.

STEEL TANKS.

JOHANNESBURG OFFICE: 64-66, STANDARD BANK CHAMBERS, COMMISSIONER STREET.

HADFIELDS Ltd.

East Hecla and Hecla Works, Sheffield, England.

Workmen employed during the war, over 15,000.
Works area over 200 Acres.

HADFIELD'S SPECIAL FORGED STEEL BALLS FOR BALL AND TUBE MILLS

MINING REQUISITES of all kinds.

ERA Trade Mark.

Sole Makers of HADFIELD'S PATENT

MANGANESE STEEL

The supreme material for the wearing parts of Stone Breaking and Ore Crushing Machinery, Tramway Track Work, etc.

Complete Stone Breaking and Ore Crushing Plants

Head Office for South Africa:
46 & 47, CULLINAN BUILDINGS,
JOHANNESBURG.
'Phone 5900 Tel. Add.: "Hecla."

Bulawayo Agents:
WHITMORE & JACKSON,
17 & 18, Agency Chambers.

Salisbury Agents:
P. PEECH & CO.,
Angwa Street.

Natal Agents:
THOMAS BARLOW & SONS (S.A.) Limited.
Smith Street, Durban.

TRADE AND INDUSTRIES SECTION.

Week in the Mining Material and Engineering Trades.

BUSINESS STILL QUIET—IRON AND STEEL—CROCODILE RIVER'S HUGE IRON ORE POTENTIALITIES—UNION'S ELEVATORS—TIMBER AND BUILDING MATERIALS—ELECTRICAL GOODS—OILS AND COLOURS—BRITISH TRADE IMPROVEMENT—DUNSWART-BENONI RAILWAY EXTENSION—UNION'S IMPORTS AND EXPORTS.

General.

Business this week has again been quiet and on the lean side and does not compare favourably with that put through in the corresponding period of last month. But in spite of the undoubted spell of dullness through which we are now passing, signs are not wanting that we are nevertheless week by week approaching better and more stable conditions. The opinion generally expressed in commercial circles is that the present state of quiescence is likely to obtain more or less until we have turned the first half of the current year and are well advanced in the second, which latter period, it is generally anticipated, will show more encouraging progress and a more rapid advance towards normal business conditions.

There can, too, be no doubt that the absence of any tangible results from the Industrial Commission now sitting—although everything points to something mutually satisfactory being arrived at between the industry and the workers—is also contributing to the present marking of time. A very satisfactory feature of the mining position is the increasing influx of native labour, which last month amounted approximately to about 18,000 and now brings up the total gain of native labour since the strike to nearly 32,000. The importance of this is readily seen when the above 32,000 is divided by ten, meaning that the ranks of the unemployed have been reduced during the past 2-3 months by over 3,000 men. A very shrewd commercial man said that commercial circles had been much impressed by the admirable handling of the railway question by Mr. W. A. Martin at the last meeting of the Johannesburg Chamber of Commerce. He, and others with him, thought that such a clear and lucid exposition of the case could not fail to be of benefit to the Rand and help to bring about some amelioration—some change of policy on the part of the Railway Board to assist the gold mining industry in furthering its scheme towards reduced working costs. The present incidence of taxation on the Witwatersrand in respect of the railways has been a crying shame for generations, and must be adjusted without delay Sterling is now gradually improving in value in America (which on account of its gold holdings now represents the world), and in the opinion of good judges we shall have but a short shrift to accommodate ourselves to parity. The latest quotation is 4.50¼ dollars to the £. All portents, however, lead to the hope that before gold has returned to its normal price, the industry will have succeeded in reducing its production costs to such a level as will enable the majority of our mines—some optimists include many of our presently called low-grade propositions—to work at a fair profit. In this connection it may be well to mention the remark made by one of our leading American mining and machinery importers, that the confidence of very big financial interests in New York had been much perturbed by the suggestion that the higher grade mines should pay for the losses made by the lower grade propositions, and he stated further that should such a policy be adopted (which, however, he could scarcely believe possible from anybody embued with true business principles) the blunder perpetrated would be a colossal one.

Prices on the whole continue much the same. Iron and steel are, if anything, a little harder, and according to latest cable advices quotations have a tendency to advance. On the Commercial Exchange, in face of keen Continental competition, there has been considerable cutting of prices.

Iron and Steel.

Business has ruled quiet during the week and activity on the Commercial Exchange has fallen off as compared with the corresponding period of last month. A prominent importer said that May month had been his best for a long time. The mines and engineering people, he said, appeared to be buying more freely, but the latter are complaining at the lack of business now going, which is reflected in the merchants' turnover at the present moment. The prospects for June, he said, are not nearly so good as for May; as there have been a good number of inquiries lately, and tenders called for, perhaps a portion of the work will be given out in due course. The same merchant remarked that the Railways are now practically out of the local buying market and have been for many months, and whereas his turnover with that department formerly amounted to thousands a month, it did not now reach as many hundreds. This abstention on the part of such a great spending department as the railway makes a big difference to the whole community, but merchants are all living in hopes that they will soon again be in the field, and carry out the promised developments in railway extension, which will not only prove beneficial to the commercial community but also help to solve the labour problem. This same merchant stated that his latest cables received in respect of iron and steel quotations showed a rising tendency. Shortages in mining materials are now making themselves rather prominent. Half inch steel plates are almost unobtainable in town, and steel plates generally are becoming short. Wheelbarrows, bolts and nuts, washers, and quite a number of general lines have also now become short. An influential importer said he had news that very few steel plates are coming into the country, so that strong holders will now be able to realise at a good profit, or, if bought in an expensive market, will be able to get cost back eventually. Amongst the weak lines are valves and water fittings generally, which have lately flooded the market, and many people have gone in for poorer stuff at lower prices, getting rubbish for cheap money, which is false economy.

Latest quotations.—Dunswart iron, 18s. to 22s. per 100 lb. basis price: Union Steel Corporation, Ltd., 25s. basis; imported iron and steel, flats, rounds and squares, from 25s. 6d. to 35s.: channels and joists, 25s. to 28s.; imported angles, 25s. to 28s.: smaller sizes, 2s. 6d. to 31s. 6d.; tee iron, 32s.; shafting, ¾ in. down to 3-16 in., 7½d. to 9d. lb.; ⅝ to 1½ in., 6½d.; 1¾ in. to 6 in., 4¾d.; steel plates, 1-16, ⅛, 3-16, 23s. 6d.; 10 x 5 and larger, 25s.; ¼ to ¾, 21s.; spring steel, 7½d. to 8½d. lb.; bolts and nuts, hexagon, round, ⅜, 8½d. to 9¼d. lb.; ½ in., ⅝ and ¾, 40s. to 45s. per 100 lb ; hexagon nuts, ⅜, 8½d.; ½ in., ⅝ and ¾, 7½d.; fish plates, bolts and nuts, ⅜ in., 8d. lb.; ½ in., 6d.; ⅝ in., 5½d.; ¾ in., 5d.; dog spikes, 35s. per 100 lb.; rivets, ¼ in., 11d.; ⅜ in., 9d.; ½ in. and ⅝ in., 37s. 6d. to 40s. per 100 lb., ⅝ in. 50s.; brass rods, ¼ in. 1s. 5d.; ⅜ in. 1s. 3d.; ½ in. 1s. 2d.; ⅝ in. upwards, 1s. 1d. per lb.; hexagon brass rods, 1d. lb. extra; copper rods, ⅜ in., 2s.; ½ in., 1s. 11d.; ⅝ and upwards, 1s. 9d. lb.; tool steel, 2s. 11d. to 3s. 3d.; brass sheets, 1s. 10d. to 2s. lb.; copper sheets, ¼ in. to 18 gauge, 1s 10d. lb.; 20 gauge, 1s. 11d.; 22 gauge to 28 gauge, 2s. lb.; firebox copper, 2s. lb.; copper tubes, ¼ in., 3s. 3d.; ⅜ to ⅝ in., 2s. 6d.; ¾ to 4½ in., from 2s. to 2s. 4d. lb.; phosphor tin, 2s. 11d.; ingot tin (Lamb & Flag), 2s. lb.; ingot lead, £28 per ton; drill steel, 5½d.; hollow, 7d. to 8d.; [illegible] 7½d. to 8d.; wire nails, 30s. to 35s.; shovels, 30s. to 48s. 6d.; sledgehammers, 35s. to 45s.; picks, 37s. 6d. to 50s.; pick handles, 19s. 6d.; hammer handles, 14 in., 7s.; 18 in., 7s. 6d. to 8s.; 24 in., 10s. to 11s.; 30 in., 17s. 6d.; 36 in., 25s.; piping, ¾ in., black, 4¾d.; 1 in., 5¾.; 2 in., 1s. 1½d.; galvanised, in., 5¼d.; 1 in., 7¾d.; 2 in., 1s. 7d.; ¾ in. steam, 5¾d.; 1 in., 8d.; 2 in., 1s. 7d.; 1 C. steel coke tin plates, London, 1 C., 14 x 20, 180 lbs., coke quality, 19s. 6d., [illegible] 1 C., 28 x 20, 216 lbs., coke quality, £1 18s. 9d.; copper, £61 17s. 6d. cash, £62 three months; tin, £150 17s. 6d. cash, £151 17s. 6d. three months; linseed oil, £29 to £30 per ton, good demand; barbed wire, "Shorthorn," 69 lb., 13⅜ gauge, 19s. 6d. to 21s. per coil; plain galvanised fencing wires, No. 8 gauge, 100 lb. coils, 21s. 6d. per coil; No. 10 gauge, 100 lb. coils, 24s. 6d. per coil; No. 12 gauge, 100 lb. coils, 26s. 6d. per coil; bulb tee fencing standards, 14 lb., 19s. 6d. per dozen; 12 lb., 23s. 6d. per dozen; black baling wire, 14 gauge, 19s. per coil, 100 lb.; 12 gauge barbed wire, 22s. per coil, 96 lb.; plain wire, No. 8 galvanised, 21s. per coil, 100 lb.; fencing standards, 12 lb., 20s. per dozen; droppers, 4 ft., 1½ lb., 3d. per dozen; screening, 3s. to 9s. 6d. per sq. yd.; cyanide, 1s. 7½d.; zinc shavings, 1s. per lb.; asbestos slate ⅜ in. to ½ in., £35 per ton; ½ in. to ¾ in., £50; ¾ in. to 1 in., £75; 1¼ in. to 2 in., £120; blue No. 3, £25; ditto, No. 2, £30; ditto, No. 1, £38.

Germany has become the largest buyer among foreign countries of Cleveland pig iron. During April she purchased over 11,000 tons, and further large shipments have been booked.

British Engineering Dispute.

Signs are now apparent that this trouble will soon be a thing of the past. The engineering unions have concluded an agreement with employers to resume work next week, and there are prospects that the ballot of members of the Amalgamated Engineering Union will be favourable to the acceptance of terms. The opinion is expressed in trade union circles that peace will be restored in the industry within a fortnight. This is perhaps not to be wondered at, in view of the Amalgamated Engineering Union's financial position at the moment, which shows a deficiency of nearly £1,500,000. Another factor tending towards settlement is the fact that members in many districts are threatening to break away, and any decision in favour of continuing the strike might easily lead to disruption.

Engineering shops report on the whole a little more business doing, and hopes are expressed of a busier time shortly. From the beginning of this month the standard minimum wage for skilled men in the town engineering shops and the garages has been fixed at £6 13s. 6d. per week. hTere is now noticeable on the part of engineers and ironfounders and the motor traders, which have hitherto acted in unison in industrial negotiations and disputes a desire to act independently of each other.

N.-W. Transvaal's (Crocodile River) Huge Ore Deposits.

Mr. Ernest Glanville writes in "The Star," from the Bechuanaland border, roughly midway between Nylstroom and the Bechuanaland border, about 100 miles north of Mafeking. He states that at Donker Poort there are mountains of iron, carrying a high percentage of fine metal, and that the nearest probable coal field is only 60 miles away. On the Sovereign Hill, he states, there are seams of 60 per cent. iron, and these rest on a mass of 40 per cent. iron. There are indications of old smeltings, and there stands to-day, he says, the biggest outcrop of good iron in the world still untouched. The site could easily be reached by the building of a line from Britz, which would follow the Crocodile. The outcrop of high grade hematite is surrounded by shales, dolomite, quartzite in bands, diabase, banded ironstone, etc. According to the report of Mr. P. A. Wagner, Ing.D., Geologist of the Union Mineral Survey, in 1921, on the Crocodile River iron deposits, he judged that one single stretch of the ore, 800 yards in length, would yield on a conservative estimate 4,600,000 long tons. He emphasised, however, that until a railway is built to the deposits their exploitation will be quite impracticable, as the cost of getting the one to rail under existing conditions would be prohibitive. Owing to remote situation of the iron area from the principal centres of iron and steel consumption and from the coalfields producing a coking coal it would not pay to erect ironworks on the spot. The ore, he says, will almost certainly be smelted at Pretoria, not merely because of the advantaegs that Pretoria offer as the centre of iron and steel production, but because the South African Iron and Steel Corporation, Ltd., have purchased, or have under option, practically the whole of the iron area. Conditions on the whole are extremely favourable to cheap mining. All the hematite exposed at the surface is capable of open-cast or adit mining, and it will take very many years before the necessity for underground mining proper will arise. Quarrying costs should not exceed 3s. per ton, and the cost of adit mining 7s. 6d. per ton. With reasonable care there should be no difficulty in maintaining a grade of over 60 per cent. of iron. The one is of almost ideal purity, and appears to be of Bessemer grade, *i.e.*, to contain less than ·05 per cent. of phosphorus, which renders it suitable for the acid Bessemer process of making steel. Mr. Wagner concludes by stating that the cost of getting the ore to Pretoria, assuming that the railway route chosen be along the Crocodile River, via Britz, approximately 120 miles, would be 9s. 3·66d., inclusive. For ore containing 60 per cent. of iron this is extremely low, and, given a railway, the Crocodile River hematite should become a factor of great importance in the South African iron and steel industry.

Union's Elevators.

Eight electric capstans are to be supplied by the New Switchgear Construction Co., Ltd., of Sutton, Surrey, for the grain elevators now being erected in the Union. For the Capetown portion of the equipment there will be three Hillariet electric capstans, each capable of developing at the capstan head a pull of 5,300 lbs. to deal with the grain trucks over the whole of the roads in the loading and unloading yards. For the Durban portion of the equipment there will be five Hillairet capstans, capable of exerting a pressure at the capstan head of a pull of 5,400 lb. The capstans possess characteristics which will enable them to be handled by unskilled native labour. The power absorbed by the capstans for D.C. at maximum load is 20 k.w., and in the case of the capstans for 3-phase current 22 k.w. Messrs. W. and T. Avery, the Birmingham weighing machine manufacturers, are supplying 16 dormant hopper scales, each of 10,000 lb. capacity, for the country elevators, and 8 similar machines, but of 100,000 lb. capacity each, receiving scales for the terminal elevators at Capetown and Durban. The use of the 10,000 lb. dormant

Box 3807. **Tel. 5892.**

WRIGHT'S ROPES

H. ALERS HANKEY - - - Sole Agent.

hopper scales is for the receipt of grain from the farmers in the country elevators; the 100,000 lb. scales are for the receipt of grain in the terminal elevators from the railway wagons when they have brought the grain from the country elevators .

Hydro-Electric Plant, Great Brak River.

Tenders are invited for the supply, delivery, and erection, alternating the supply and delivery only, f.o.r. Great Brak River, of—

Contract No. 1,

1,200 k.w. Pelton wheel generating set.
1 control switchboard.
1 distributing switchboard
Pipe line, valves and fittings.
1.3 miles of transmission line.

Also of the building of

Contract No. 2.

Intake reservoir, capacity 500,000 gallons.
Power station
Tail race flume and footbridge.

Applications in the first instance to be made to the Consulting Engineer, Major C. G. Trevett, O.B.E., A.M.I.C.E., Rosmead Avenue, Capetown.

Timber and Building Materials.

Business in timber has been fairly good during the week, but there is nothing new to report except that 3in. by 9in. deals continue very firm, as do all quotations from the Baltic. Stocks on hand are satisfactory.

Timber prices.—3 x 9 deals, up to 18 teens 1s., over 18 teens, 1s. 1d.; scantlings, 10½d.; beaver boards, 4¼d. to 4½d.; floorings, 6¼d. to 6½d.; ceilings, 4¼d. to 4½d.; Oregon, 5s. 6d. a cube; pitch pine, 7s. 6d. to 8s.; corrugated iron, 8d to 10d. with a firm tendency. Furniture timber: Burmah teak, 17s. 6d. per cube here for first quality, 14s. 6d. for second at the coast; American oak, 1 in., 10½d.; 1½ in., 11d.; 2 in., 11½d. at coast; and Japanese oak, 1 in., 1s. 1d.; 1½ in., 2 in., 1s. 2d., at coast; West African mahogany, 1 in. to 4 in. thick, 26s. 9d. to 27s. 6d. per cube, at coast; Rhodesian mahogany, 9s. per cubic foot at mills; Honduras mahogany, 30s. per cubic foot; American yellow pine, 1s. 6d. per foot of 1 x 12 here; American pine shelving, 10d. per ft.; 3-ply wood, 3 m.m. up to 5 m.m., alder and birch, 4d. to 6½d. per sq. ft.; oak and teak, 3-ply, 11d. per sq. ft. Prices for bricks remain about the same at: Klompje bricks, 25s. per 100 at works; fire bricks, £10 per 1,000 at works; mixed, 70s.; wire-cuts, £4 10s. to £5; and £5 for pressed per 1,000, at kilns; columns from 20s. to 30s., according to size; roofing tiles, Marseilles, £25 per 1,000 at the works; chimney pots, 12 in., 7s. 6d.; 15 in., 9s.; 18 in., 10s. 6d.; dry red oxide, 16s. per 100 lbs.; white lime, 7s.; unslaked, 10s. 6d. per 180 lb. bag; 8 lb. bag, 1s.; blue lime, 4s. 3d.; blue plaster lime, 5s. 3d.; cement, 11s. 6d. a bag; damp course and roofing, 36s., 54s. to 55s. for 1 to 3-ply. Building operations are still rather quiet, but an impetus is expected very shortly.

Second-hand Iron and Timber.

Business remains on the slow side, with plenty of inquiries but little resulting therefrom. Dealers, however, look forward to better times within a few weeks. Stocks are not too plentiful; prices are 6d. for iron and 8d. for timber.

Electrical Goods.

A large importer this week said business was much about the same as last reported, very little doing in town or outside. A few orders are coming in from Kimberley and other outside districts, but nothing to speak of. In view of the large amount of work to be done, which has been outstanding for so many months, he could not understand the present paucity of business—it might, he thought, be attributed to the general desire to see the turn of the half-year and to the outcome of the Industrial Commission. Prices are remaining firm and quotations are advancing in Germany, where the cost of raw materials, principally from Britain and the Empire, is making itself more and more felt.

Oils and colours.

White lead in oil, 10½d. per lb., 37s. 6d. per 50 lb. keg; English red lead, 10d. per lb.; 35s. per 50 lb. keg; dry white lead, 1s. 6d. per lb.; linseed oils, raw or boiled, large bottle 2s. 6d., small 1s. 6d. each, 7 lb. tins 7s. 6d. each. 4 imperial gallons 32s. 6d.; spirits of turpentine, large bottle 3s. 6d., small 2s. each, 10s. 6d. per ·83 imperial gallon; turpentine substitute, 5s. 6d. per tin, each 5/6th imperial gallons; oxide in oil, 25s. to 45s. per 50 lbs.; oxide, dry, 14s. 6d. per 100 lbs.; linseed oil putty, in 100 lb. drum bulk, 4½d. per lb.; English putty in bladders, 6d. per lb.; colours, ground in oil, 40s. to 67s. 6d. per 50 lbs.; dry colours, 6d. to 14s. 6d. per lb.; colours ground in water, 1s. 6d. to 10s. per lb.; ground in gold size, 2s. 6d. to 5s. 6d. per lb.; ready mixed paints, 1s. 6d. per lb., 16s. per 14 lbs.;- aluminium paint, ½ imperial gallon, 22s. 6d.; 1 imperial gallon, 40s.; roof paints, 16s. to 17s. 6d. per 14 lb. tin, 70 lb. drums 75s. to 82s. 6d.; varnishes, 25s. to 47s. 6d. per imperial gallon; pumice powder, 1s. 3d. per lb.; beeswax, 1s. 6d. per lb.; alum, in powder, 9d. per lb.; creosote, 4s. 6d. per 5/6th imperial gallon tin; gum arabic, 3s. 6d. per lb.; gum benzoin, 7s. per lb.; methylated spirits, 5s. 6d. per tin, 5/6th imperial gallon, 1s. 3d. per bottle; resin, 8d. per lb.; caustic soda, 1s. 3d. per lb.; tallow, 1s. per lb.; coal tar, 4s. 6d. per ·83 imperial gallon, 17s. 6d. per 4 imperial gallons; Stockholm tar, 9s. 6d. per ·83 imperial gallon, 47s. 6d. per 5 imperial gallons; common glue, 10d. per lb.; good quality cake 1s. 3d. per lb, finest Russian 1s. 6d. per lb.; gold leaf, English, plain, 3s. 6d. per book, transferred 4s. 3d. per book; aluminium leaf, plain, 1s. 9d per book, transferred 2s. per book.

A further fall in the price of paraffin is announced, the general public being charged 15s. 9d. a case, instead of 16s. 6d. at the coast.

Oil.

As mentioned in a previous issue, the presence of the Soviet delegation at the international conference at Genoa has only served to intensify the battle for the control of the Russian oilfields between British interests, as represented by the Royal Dutch Shell Group, and American interests, as represented by the Standard Oil Company. It is stated on good authority that despite all denials to the contrary some sort of agreement does exist between the Bolshevists and the Royal Dutch Shell Group, and that the Soviets are about to give the R.D.S. Co. a lease on some of the commercial oil districts subject to a royalty, and to appoint a Shell distribution agent abroad for oil belonging to the Russian Government. At any rate it is known that the American oil interests brought pressure to bear at Washington to obtain a declaration for the American Government in favour of the open-door policy in Russia.

British Trade Prospects.

Owing to improved exchanges hopes are expressed that trade is on the mend. At any rate prices are now exhibiting a tendency towards firmness, most commodities seeming to have turned the corner, with slightly rising prices. It is generally expected that stabilisation in the cost of living will be found somewhere about the present level of prices. Sterling in New York has reached its highest point for nearly three years, being now 4.50 dollars. The reason for the rise is the heavy buying of sterling in New York caused by the agreement for the extension of the German moratorium and the improved condition of business between Britain and America.

Atlantic Shipping War.

America, it is announced, is reducing shipping freights generally as from June 15. The ocean freights from New York to Capetown are to be reduced 2 to 3 dollars a ton [illegible] Sir Owen Philipps the chairman of the Royal Mail Steam Packet Co., at the recent meeting of that company, stated there was a growing tendency of certain nations to discriminate against foreign shipping by heavier taxes and customs and prohibition from participating in coastwise trade. He said Britain had always stood for the freedom of the seas but it might be necessary in self-protection to reconsider her position, which the Act of Parliament of 1853 empowered her to do at any moment. Sir William Joseph Noble, chairman of the Cairn Line of Steamships, Ltd., has denounced the United States Mercantile Marine Bill which President Harding is forcing into law this session. By discriminating against ships of foreign nations it must, he says, act disastrously on the free flow of overseas commerce on which the prosperity of shipping and of the world in general depends.

Railway Extensions.

New East Rand—Dunswart—Apex deviation railway. This East Rand railway deviation, linking up Benoni with the main line system of the Far East Rand, is now in course of construction and giving employment to hundreds of white men. The new line will start from the Dunswart siding and proceeding due east enter Benoni on the high ground to the southern side of the township. The total length of the new line will be three miles and 73 chains, and is being constructed to carry a double line of rails of 75 lbs. weight. The total cost of the work, including the new railway station at Benoni, will be £130,000, of which not less than £60,000 will be expended on white labour, whose pay if they desire to work on day's pay is 3s. 6d. for single men and 7s. 6d. for married men. The majority of workers, however, realise the desirability of falling into a gang and taking a section of work on piece rates.

Union's Imports and Exports for May.

The following are the values of imports, exports and gross revenue collections for May, viz.:—

	Imports.	Exports.	Duty.
Capetown	£853,403	£2,588,045	£106,130
Port Elizabeth	750,938	330,000	81,776
East London	347,408	295,718	34,492
Durban	1,105,607	546,934	124,105
Johannesburg	—		69,591
Lourenco Marques ...	316,042	(see note C)	15,686
General Post Office...	(see note A)	—	21,539
Other ports and stations	96,032	40,805	20,093
Total	b3,469,430	d3,801,502	473,712

Note.—(a) Figures not available; (b) value includes £213,354 imports by South African Government; (c) figures not available; (d) value includes £2,291,847 gold exported at Capetown.

Reduction in Miners' Wages.

The Joint Wages Board of Lancashire and Cheshire has decided that miners' wages shall be reduced this week (7th) a further ten points, which will reduce wages to the lowest level that can be reached under the existing agreement. 100,000 miners are affected.

Hamburg's Shipping Activities.

2,612 vessels, with a tonnage of 2,619,529, it is stated, entered or left Hamburg in May, as compared with 2,604, with a tonnage of 2,447,513 in May, 1913.

World's Unemployment.

The unemployment in Germany is rapidly decreasing. On May 1 only 69,000 unemployed were receiving relief, as compared with 116,000 on April 1.

In America also there has been a big decrease in unemployment.

In Britain, now that the end of the engineering strike is in view, and with more encouraging trade prospects, the unemployed ranks should soon be considerably depleted.

Wonderful New Alloys.

In Great Britain vigorous efforts are being made to develop alloys of various metals with special properties of great usefulness in every day life. At a recent trade exhibition held in London several examples were shown of water taps and other fittings made of a remarkable aluminium alloy discovered at the National Physical Laboratory during researches carried out under the auspices of the British Government. These taps are completely satisfactory from the point of view of the water companies, and they have the merit of being non-corrodible, retaining their polish for an indifinite period. Experiments are also being carried out with the object of replacing nickel by tin in the covering of iron plates, and these experiments are expected to lead to the production of a rustless plate which will be of immense benefit to the industry all over the world. A certain nickel alloy which has great stain-resisting qualities is now being made in the form of spoons and forks, and many other articles of household utility. Stainless steel knives have also been developed a step further towards the ideal. Hitherto, stainless steel has been somewhat lacking in elasticity, and a new form has been brought out in which a knife blade can be bent almost double and will spring back into its original shape instantly without its quality being in any way impaired.

A Substitute for Corrugated Iron.

At the Imperial College of Science, London, a demonstration was given by Mr. F. C. Dyche-Teague, B.Sc., F.I.C., of a new form of pitch which has been patented by a British firm under the name of "Collactite." It was shown that ordinary hand pitch could, by a special process, be converted at small cost into a product which, with an equal part of water, was highly fluid. The treated pitch was shown to have very great penetrative and covering power and was, in fact, in an ideal condition for mixture with either asbestos or cellulose fibre prior to the felting of the latter on a box-board or similar paper-making machine. The material has been produced on a commercial scale and samples cut from 12ft. by 3 ft. sheets were passed round at the meeting. It is tough and hard and strongly resembles vulcanite. When struck with a hammer it gives a clear ringing sound, and it can be punched, hammered and sawn without any tendency to crack. It is said that corrugated sheets can be produced at a price competitive with corrugated iron, and that the material will not warp or sag when exposed to the hottest sun. A test showed that a 3/16th in. sheet could support 600 lb. in the centre of a 3 ft. span.

The Minister of Colonies in Portugal has published the following notice in the Portuguese *Government Gazette*, Lisbon: "Having regard to the qualities shown by the citizen, José Fernandes Ferreira, as journalist, professor, polyglot, and notable propagandist of the good name of Portugal; to the signal services rendered by him, especially to the Province of Moçambique in his relations with the Transvaal and the Union of South Africa, accomplishing with proficiency work of a technical and diplomatic character, to his reports on South African affairs, excellent examples of observation and study, and already duly eulogised by Ministries; and, further, to his high patriotic spirit, the Government of the Portuguese Republic commands that he be given public praise for those high scientific merits and correspondent civic virtues." Mr. Ferreira was originally a member of the staff of the *Lourenco Marques Guardian*, after which he became Secretary of the Joint Railway Board (S.A.R. and the Lourenco Marques Port and Railway), being subsequently appointed Agent in Johannesburg of the Port and Railway of Lourenco Marques, which appointment he now holds.

The Week's Meetings.

RAND MINES.

Year Reviewed.

Position "Encouraging."

Effect of Reduced Working Costs.

Sir Evelyn Wallers presided at the annual meeting of the Rand Mines on June 2, and in the course of his speech said:—

The reports and accounts for the year 1921, which have been in your hands for some time, give you the fullest information on the affairs of your company, both as to its financial situation and in respect of the working results of the companies in which you are interested.

I shall, therefore, endeavour to avoid wearying you with a repetition of facts and figures which will have already received your careful consideration, confining myself to a brief comment on the salient features of the year's operations

Sixteen Milling Companies.

Apart from outside interests, the working results for last year of the 16 milling companies which we administer and in which our greatest interest lies show that an increased total tonnage was milled, the yield in dwts. per ton being the same for all practical purposes of comparison. The gold produced, at an average price of 105s. 3d. per fine ounce, realised £20,261,249, whereas in 1920 our yield in ounces, at 110s. 9d. per fine ounce, realised £20,773,362, or a decrease of £512,113.

The working expenditure for last year averaged 26s. 6.6d. per ton milled, or an increase of 4.3d. per ton as compared with the year 1920. The resultant working profits and dividends distributed by the companies of our group, therefore, obviously suffered considerably, and in natural consequence the profits of our own company for last year, at £518,671 8s. 6d. show a decrease of £344,334 16s. 11d. as compared with the year prior to that we are reviewing. The profit we earned, together with an amount of £627,766 0s. 10d., being our unappropriated balance at the beginning of 1921, gave us a total of £1,146,437 9s. 4d., to the credit of our appropriation account. Two dividends were paid, absorbing £372,049 2s. 6d., and an amount of £274,517 4s. 1d. was reinvested in excess of the book value of assets realised. A sum of £446 15s. 5d., being dividends previously forfeited was refunded to shareholders, leaving a balance of £499,424 7s. 4d. unappropriated and brought forward at the begining of the current year.

The book value of the various shares and debentures held by your company stands, as you will see, at £2,793,408 9s. 4d., a figure considerably below their market value, as you will yourselves at once realise, and I would add here that the policy we have consistently followed of writing down the value of our holdings in any instance where they are above market price has been carried out this year also.

Our reserve fund stands at the substantial figure of £2,261,909 14s. 4d.

The ore reserves of the companies in which we are interested, both of our own group and outside, were on the whole well maintained, as you will have seen from a study of the informative schedules attached to the reports.

This, I think, completes the series of figures that I am going to quote to you and we might revert to a consideration of the really essential features which are very significantly forced upon our attention by the fact that, as I have already mentioned, the product of the companies of our group realised an average of 5s. 6d. per ounce less this year than last and that the working costs, instead of decreasing in a similar proportion, rose to some little extent—namely, by just over 4d. per ton milled

Situation Reviewed.

The situation thus disclosed, and it was one of the utmost gravity to all concerned in and about this industry, should not have found any of us in a condition of ignorance or unpreparedness. For years past we have emphasised with all concerned—and not least with the workmen in this industry and the Government of this country—the grave difficulties in which the mining industry would find itself when, as was almost certain to be the case, the reduction in working costs appreciably lagged behind the fall in the price of our product. I say that we repeatedly urged these facts in the most emphatic way, but more than that was done: a Low Grade Mines Commissoin was appointed about two years and a half ago, of which some of us were members, and the report of that Commission, as you know, set out the situation in the plainest of terms and in what has proved to be an extraordinarily true light. As the facts and probabilities were thus made public over a period of two or three years, and emphasised in season and out of season, it was therefore disheartening and the keenest of disappointments that the workmen of our industry—or at any rate a considerable portion of them—apparently failed entirely to appreciate the situation.

The community generally—and in fact this country as a whole—proceeds on its way in the knowledge, sometimes somewhat vaguely and indefinitely thought out, but just recently brought home to them with some severity, that their general well-being and prosperity rests at the present time almost completely on the mining industry. The Parliament and Government of this country have hitherto looked upon us almost entirely as an exceedingly valuable taxing machine, although now we trust that unsound view has been abandoned.

But as regards the men themselves engaged in the industry, making a living directly from it, the wise and moderate section of them should surely have got a pretty clear vision of the situation that was bound to arise and the absolute necessity, in their own well-being, for a reduction in the cost of working. In point of fact, I believe that a section did realise it, and that the few but noisy extremists led them astray.

The Recent Labour Trouble.

You will remember that at our annual meeting last year the significance and seriousness of the facts to which I have been referring were dealt with in some detail. Throughout last year, and particularly in the last two or three months of 1921, we corresponded and conferred with the representatives of the workmen in the industry with the intention and object of once more setting out all the facts and agreeing upon the necessity for and the method of solution.

I need not refer here in detail to the conferences that took place, the strike declared by the workmen and the happenings thereafter. They were all appalling and disheartening. The fact remains that the machinery broke down utterly and completely—machinery that we had built up with much patience and considerable hope over a period of years with the object of maintaining industrial peace and of achieving industrial efficiency.

This is probably not the place or the opportunity to analyse further the breakdown and disaster that occurred, but I express this conviction; that the vast majority of our workmen in this industry are level-headed, sensible, good men, but that they failed to submerge with the weight of their own moderate opinion the comparatively small number of extremists whom one knew so well and with whom one had conferred so often, and, I may add, apparently ineffectively.

In no society of any description is disaster avoided where the control gets into the hands of an extreme section.

The Future of the Industry.

And now the industry has again restarted, and the question is, what are the hopes regarding its future? I think that there is much ground for encouragement. The native labour force, depleted by the strike, is being rehabilitated in numbers at a greater speed, fortunately, than some of us anticipated, and this month operations as a whole should get very near the normal figures, both as regards milling and development work. The main items in working costs where a sensible diminution is occurring—and which we hope will be in evidence to a greater extent during the remainder of this year—are the cost of stores and material and European wages. Our group last year spent on stores and material the sum of £5,000,000, and on European wages £4,700,000, the former being equivalent to approximately 8s. 9d. per ton milled and the latter to about 8s. 2d. per ton milled. The downward tendency of the cost of stores is a satisfactory feature, and in this connection I would add that our department which supervises the buying and general distribution and handling of stores has achieved some good work in reducing the stocks kept in hand on our various mines by some £220,000 during the year.

Wages to Europeans will also show a considerable decrease, and on this point there is a word or two to be said, for it is a question on which we should be quite clear in our minds. Whilst it is true that wages have been reduced to some extent, it is quite clear that the wages paid in this industry, that is, their purchasable value, still maintain the position that they always occupied, namely, that they compare extremely favourably with wages in any other part of the world.

I draw attention to this fact because one hears that there is a good deal of bitterness existing. No doubt there is; there certainly would be after the recent appalling events, which inevitably produce much unemployment and distress. Happily the industry, as I have just said, is rapidly getting back to a fairly good native labour complement, and to much more normal conditions.

That is the position, therefore, as far as I can see it, and it is not without a good deal of encouragement. I need not labour the point that if we all do our best for efficiency, there will be, with reduced working costs, a vast amount of ore already developed in the mines of these fields that was out of the picture last year owing to the excessive figure of working expenditure, that will be assuredly in the picture this year—a matter of the highest importance to all concerned.

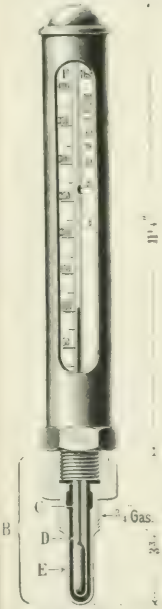
Recent Progress.

The first three months of this year were, as you know, occupied with the

BELL'S UNITED ASBESTOS (Lond.)
AFRICAN AGENCY, LIMITED,
Telephone No. 345, Central, 24-26, CHORLTON CHAMBERS, HARRISON ST., JOHANNESBURG. P.O. Box 2642.
SOLE AGENTS IN SOUTH AFRICA FOR
BELL'S UNITED ASBESTOS CO., LTD., LONDON.
(OLDEST ASBESTOS MANUFACTURERS IN THE WORLD).

VIEW OF GENERAL ABESTOS WORKS, HAREFIELD, MIDDLESEX.
"GLADIATOR" ASBESTOS CEMENT BUILDING MATERIALS.
Over 170 million square feet "Gladiator" Building Material supplied the British Government during the War for Army Hutments, Hospitals, Aerodromes, Munition Factories and the like.—Enquiries invited.

DAVIS-MADE THERMOMETERS



JOHN DAVIS & SON
(DERBY), LIMITED.

BRASS SHUTTER THERMOMETERS FOR AIR COMPRESSOR

CHEMICAL THERMOMETERS IN BRASS PROTECTING SHEATHS. STEM DIVIDED. TEMPERATURES UP TO 600 FAHR. CAN BE SUPPLIED IN THE FOLLOWING LENGTHS, 6, 8, 10, 12 OR 14 INCHES

PRICES AND FURTHER PARTICULARS WILL BE GLADLY SENT ON REQUEST.

Sole Agents for South Africa:
BARTLE & CO., LTD.
Loveday House 'Phone 3553. Wires "Faggot."
P.O. BOX 2466, JOHANNESBURG.
Box 444, KIMBERLEY and Box 1228, DURBAN.
DAVIS-MADE MEANS HIGHEST GRADE

Telegrams :
"NIVONIA," Johannesburg.
'Phones :
2196,—2197,—2198

J. & R. NIVEN, Ltd.,
ENGINEERS,
CONTRACTORS,
MERCHANTS.

BALATA BELTING
JAMES DAWSON & SON, Ltd.
BITUMEN SHEETING
GEO. M. CALLENDER & CO., Ltd.
BOILERS
PENMAN & CO., Ltd.
COAL CUTTERS AND CONVEYORS
JEFFREY MANUFACTURING CO.
COLLIERY PLANT
CAMPBELL, BINNIE, REID & CO.
DRILL STEEL
JOHN NICHOLSON & SONS, Ltd.
ENGINES, LOCOMOTIVES
ANDREW BARCLAY, SONS & CO., Ltd.
ELECTRIC LIFTS
A. & P. STEVEN, GLASGOW.
CRANES
BUTTERS BROS., GLASGOW.
HOSE, VALVES, SHEET RUBBER
THE LEYLAND & BIRMINGHAM RUBBER CO., Ltd.
LUBRICANTS
THOS. HINSHELWOOD & CO., Ltd
STEEL SCREENING
THOS. LOCKER & CO., Ltd.

Barsdorf's Buildings, Marshall Street,
JOHANNESBURG.

strike, and heavy losses were naturally sustained by our companies. April registered a considerable improvement, and last month and this month will, I am sure, show still greater progress in the earning of profits; but obviously the dividend distributions from our companies for this half year will be either non-existent or very severely curtailed. That is a conclusion that must have been apparent to all. On the other hand the outlook for the remaining six months of this year, in our belief, as I have tried to show you, is good.

As regards our outside interests of any importance, notably our holding in the Witbank Colliery and our substantial interests in unfloated coal properties, there is, I think, little information to add to that already in your possession. The Witbank Colliery had a fairly good year's trade on the whole during 1921, and made satisfactory dividend distributions; but the strike which occurred also on the coal mines during the first quarter of this year very gravely affected this country's coal trade, and particularly its export of coal. As you will readily understand, steamships ceased calling at our ports for this commodity, and it will take time to regain the trade which has been lost.

Our unfloated coal interests were referred to at the last annual meeting, and the situation in this respect remains the same. The interests that we hold in the Witbank-Middelburg district are extensive, and we hope will eventually constitute an asset of considerable value.

The interests we possess in general industrial undertakings apart from gold mining and coal mining are comparatively small. In common with the general depression, they suffered. There is, however, reasonable ground for anticipating that during this year some improvement will be shown in enterprises of that character. The effects of a strike and cessation of operations in the gold mining industry such as we experienced in the first three months of this year are felt throughout the country, and permeate every business and every section of the community.

General Questions.

In dealing with matters of general interest, it is to be recorded that the efficiency of our various departments has been well maintained and quiet and steady progress made in many directions. The important investigations instituted by our electrical and mechanical engineering department in connection with the efficient use of rock drills and drill steel have been energetically continued. There is no doubt that this work will have, and indeed is already having, a marked effect in increasing the drilling efficiency of our mines. It is satisfactory to report, also, that the supply of compressed air and electricity from the Rand Mines Power Supply Company has been maintained throughout the year without interruption of any moment. The attention of our technical departments is always directed towards securing economy, together with efficiency in the use of these services, which constitute an important item in the working costs of our mines.

In our metallurgical practice, the development of de-aeration referred to in last year's report has progressed beyond the experimental stage, and plants operating under licence from the Merrill Company, the owners of the patents, have been installed at the City Deep and the Modder B., and are giving satisfactory results. I would add that the process has for its object the extension of the dissolved oxygen from the gold-bearing solution, whereby precipitation efficiency is much increased and satisfactory economies effected.

In the trials carried out at the Springs Mines, Limited, by the Consolidated Mines Selection Company, in which, by the courtesy of that company, we participated, much valuable information was obtained in connection with the extension of the scope of economic usefulness of tube mills. That information will be of advantage to us.

Health Conditions.

The health conditions on the gold mines of our group continue to show further progress beyond the excellent figures already recorded from time to time. The total death rate from all diseases among natives, notwithstanding the fact that last year several influenza outbreaks occurred, was the lowest on record with the exception of the year 1917. The total mortality figure for last year was 11.18 per 1,000, as against 13.95 per 1,000 in 1920. In regard to special diseases, one might mention that there has been a great improvement in the incidence of scurvy, as well as in deaths from this disease. The improvement is the result of the application of modern knowledge to the prevention and treatment of the disease, and it will probably interest you to know of a newly-described method introduced in our native hospitals during the year. This is the intravenous injection of raw orange juice, with most satisfactory results.

There is a still further decrease in the number of cases of and deaths from enteric fever, a most important feature, because this is a disease which is considered as constituting a standard measure of sanitary and hygienic efficiency.

The mortality from accidents in our group is the lowest on record, being 2.94 per 1,000, as against 3.08 per 1,000 for the previous year.

I am giving you a certain amount of detailed information in regard to these general matters, because I am sure you will realise the importance of the work; it has a very direct connection with the costs of working where the number of native workmen employed is between 85,000 and 90,000.

Native hospitals are attached to all our mines, but we have three large central hospitals—at the Crown Mines, City Deep and Modder B.—where serious cases are handled. These hospitals steadily improve in efficiency, and during the year we have had professional visitors from other parts of the Union and from elsewhere in the world. You will be glad to know that without exception they have expressed themselves in the highest terms as to the efficiency of these institutions and the organisation generally of this work.

Ex-Enemy Shares.

You will have noticed in the Press that the Central Mining and Investment Corporation has purchased from the Custodian of Enemy Property all the enemy shares held in the companies of this group; included in those shares there are approximately 70,000 shares in this company, which were purchased at 39s. The company has purchased the shares from the Central Mining Corporation at the same price, plus a commission of 5 per cent., and the intention of the board is ultimately to cancel them.

The combined staffs associated with this company, both on the mines and in the head office, constitute a very large number. I am not going to attempt to mention names, but I do desire to place on record again our keen appreciation of the excellent way in which all of them carried out their respective duties during last year. In the first three months of this year all of them, but in particular the mine managers and officials, were called upon to cope with a situation of extreme gravity and difficulty, and one of considerable personal danger too. And most assuredly they did not fail; they tackled that situation with entire loyalty, with great courage and ability and their general attitude and the conspicuous success they achieved are beyond praise.

In this connection, and before concluding my remarks, I would also place on record our admiration of the general behaviour of our native workmen throughout the period of the strike and revolution. Disregarding the appalling example set them, and in the face of considerable provocation, their attitude and conduct were exemplary.

I now beg to move that the Report, Balance Sheet and Accounts laid before the meeting be adopted and passed.

The report and accounts were adopted.

* * *

CROWN MINES.

Mr. S. Evans's Review.

Ore Reserves and Working Costs.

Crux of the Position.

Mr. S. Evans presided at the annual meeting of the Crown Mines on June 2, and in the course of his speech said:—

You will note from the report and accounts that the operations of the company in 1921 resulted in a net balance of revenue over disbursements of £662,800, which with the amount of £457,352, the balance unappropriated at the end of 1920, £157 discount on debentures purchased, and £335 forfeited dividends, brings the total credit in the appropriation account to £1,120,644. This has been allocated thus:—

Expenditure on account of capital, annuity in respect of undermining rights and redemption of debentures ...	£213,816
Government and provincial taxes	98,734
Dividends	305,534
Total ...	£618,084.
leaving a balance of	502,560,
which is made up of—	
Stores and materials, sundry debtors, etc.	299,609
and net cash	202,951

The net cash on hand at the beginning of 1921 was £138,748.

The Central Mining and Investment Corporation, Limited, recently acquired from the Custodian of Enemy Property all the enemy shares of the companies of the Group held by him. They included 28,000 Crown Mines shares, which were acquired for 31s. per share. The Corporation has offered these shares to the Company at cost price, plus a commission of 5 per cent., and your Board has accepted this offer.

The outstanding features of the year under review were the high working costs and the low efficiency of our labour force, as will be gathered from the following comparison of the results with those of 1914:—

	1921.	1914.
Average strength of labour force—		
Europeans	1,753	1,576
Natives ...	13,109	11,826
Footage developed	44,856	32,698
Tons milled ...	2,177,000	2,287,000
Per white employe .	1242.6	1451.1
Per native employe .	166 1	193.4
Gold recovered, ozs.	643,065	707,957
	£	£
Working revenue .	3,388,748	2,975,688
Working costs .	2,716,718	1,784,059
Working profit .	672,030	1,191,629
Dividends paid	305,534	799,090

The Gold Premium.

There have been very wide variations in the currency price of gold on the London market during the year. It started at 114s. and fell to 104s. 8d. at the end of March and to 102s. 8d. by the middle of May; then it rose to 115s. by the beginning of August and afterwards was of the Langlaagte [illegible] the premium, the price at the end of December being 97s. 9d. The average price realised by the company for the year [illegible] compared with 111s. 4d. in 1920, and 93s. 7d. in 1919. (In 1919 the industry was able to sell gold at a premium only for the last [illegible] months [illegible].) This year the price has varied between 97s. 9d. and 92s. 9d., which is about [illegible] per ounce lower than the average price in 1921, and 16s. [illegible] lower than the average price in 1920. 92s. 9d. represents a premium of 9.5 per cent. over the Bank of England pre-war buying price. The additional revenue obtained by the company on account of the premium has been:—

	Total.	Per Ton Milled.		Per fine oz. Produced.	
	£	s.	d.	s.	d.
1921	691,002	6	4.2	21	5.9
1920	926,062	8	5.0	27	6.[illegible]
1919	286,309	2	11.3	8	11.5
	£1,903,373	6	0.2	19	5.7

Had our gold output last year been disposed of at the standard value of 85s. per fine ounce the result would have been a loss on the working of the mine of 2.1d. per ton milled, or £19,000 altogether, and this is exclusive of the redemption of and interest on debentures, capital expenditure and Government taxes.

This year, owing to the strike, we had up to the end of March incurred a working loss of £89,663. During April we made a profit of £35,661, and last month it is estimated that the profit will amount to close on £45,000. A comparison of the results of the four months of this year with those of the corresponding period last year conveys a fair indication of the cost of the strike to this company:—

	January 1 to April 30 1922.	1921.
Working revenue—		
Total	£443,353	£1,037,105
Per ton milled	30s. 3.2d.	30s. 1.8d.
Working expenditure—		
Total	£497,355	£886,965
Per ton milled	33s. 11.4d.	25s. 9.4d.
Working profit—		
Total	—	£150,140
Per ton milled	—	4s. 4.4d.
Working loss—		
Total	£54,002	
Per ton milled	3s. 8.2d.	—

We are still suffering from the effects of the strike, as the average number of natives in the service of the company on May 30 was 11,982, as compared with 15,495 at the beginning of January. Our working costs for April were 22s. 0.6d., as compared with an average of 25s. per ton milled last year, but it must be remembered that the quantity of ore milled in April this year was only 146,400 tons compared with 192,000 tons in April, 1921.

From now onwards there should be a steady improvement in the profits as the working costs should show a further appreciable reduction in the course of the next few months, provided, of course, that our native force continues to increase, as we have every reason to expect that it will.

Reverting to last year's results, it will be observed from the figures I have quoted that, although we treated 110,000 tons less, the costs were £932,659 higher than in 1914. It is true that we developed last year 12,000 feet more than in 1914, but the additional cost of that work would amount to only about £60,000. Taking gold at its normal price, the revenue per ton last year was 1s. 2.6d. less than in 1914, while the costs per ton were 9s. 4.3d. higher. Had the costs in 1921 been the same as in 1914 and had there been no premium on gold the working profit would have exceeded £[illegible].

The Ore Reserves.

These facts clearly indicate that our main difficulties are not connected with the value of the ore reserves. In fact, taken as a whole, our ore reserve position is satisfactory, and justifies us in taking a hopeful view of the future prospects of the company. When the Crown Mines was formed Mr. Weldon never anticipated a higher average grade than 5½ to 6dwt. from most of the areas from which we are now drawing ore. Of the ore developed last year 79.1 per cent. was payable and totalled 2,250,000 tons of an estimated average value of 6.3dwt. We have now exposed on the 19th level a stretch of good main reef leader 2,500ft. long.

Owing to the strike the amount of development done this year has been small, but I may mention that the values exposed in the lowest levels of the mine continue satisfactory. As you will see from the report of the consulting engineer, our available ore reserves totalled in December 31 last 8,511,200 tons, estimated to carry 6.1dwt. over a stoping width of 61in., as compared with 8,131,700 tons averaging 6.4dwt. over a stoping width of 62in. at the end of 1920.

There are also fully developed in the mine close on 6,000,000 tons of ore of an average value of rather more than 3dwt., which is to-day classed as unpayable. Were it possible to bring costs down to something approaching the level which prevailed when the Crown Mines came into existence the bulk of this ore could be worked, thereby adding to our profits, increasing the life of the mine, and affording greater scope for employment. This, I believe, is typical of the position of a great many other mines, and shows how important it is in the interests of this industry and of the country that there should be a substantial reduction in working costs.

The Langlaagte Proprietary.

The Crown Mines and the Langlaagte Estate and Gold Mining Company have recently purchased from the estate of the late Henri Jacques Lebaudy the Langlaagte Proprietary claims, bewaarplaatsen, water rights, machine stands and freehold ground for a total sum of £55,100. The mining ground has been divided between the two companies on a basis agreed upon by their technical advisers. This transaction gives us approximately 35 reef-bearing claims, which can be opened up and mined from our existing drives without much delay and with comparatively little additional expenditure on capital account.

From our present reserves we can expect an average yield of close on 25s. per ton, which, with costs reduced to something approaching the pre-war level, a fair supply of native labour, and after providing the amounts required to cover debenture interest and redemption, the underground mining rights annuities, and the estimated capital expenditure necessary for the development and equipment of the southern ground should enable us to distribute to shareholders a yearly dividend considerably better than on the average has been the case since the outbreak of the war.

It should be clearly understood, however, that satisfactory results cannot be achieved by the Crown Mines or any other company on the Rand except on condition that the management is not hampered by heavy charges of the miners' phthisis and other laws, Government regulations, labour union restrictions and interference, that the native labour supply is adequate, and that we are not burdened with increased taxation either by the Union or Provincial Governments.

The Crux of the Situation.

It is obvious from the comparison of results of last year with those of 1914 that working costs constitute the crux of the situation as far as our mine is concerned. At our last meeting I quoted figures showing how the working costs for 1920 compared with those for 1913, the year immediately preceding the Great War. The following table shows how last year's figures and those of 1913 compare:—

	Per ton milled. 1913		Per ton milled. 1921		Percentage increase in 1921
	s.	d.	s.	d.	
White employes . .	4	8.2	8	9.2	87.2
Coloured employes .	4	11.6	5	11.7	20.3
Stores and other costs . . .	6	5.5	10	0.1	55.0

I should explain that the above classification differs from that which appears in the general manager's report in this respect: certain items which should figure under labour have been deducted from stores and other costs and added to the cost of white and coloured employes. These items are, holiday and sick leave pay, accident insurance premiums, contributions under Miners' Phthisis Act, medical bureau examinations, etc., in the case of Europeon employes, and food, hospital costs, recruiting and repatriation charges, pass and Consular fees, irrecoverable advances, etc., in the case of coloured employes.

As compared with the 1913 figures, working costs last year show an increase of £930,696, or 8 6.6 per ton milled, distributed thus:—

	Total.	Per ton milled		Percentage
		s.	d.	
European employes	£440,746	4	0.6	47.4
Natives...	104,429	0	11.5	11.2
Stores and other costs	385,521	3	6.5	41.4
	£930,696	8	6.6	100.0

Cost of White Labour.

A careful analysis of our expenses shows that the main reason for the difference between the 1913 figures and those of last year is the enormously enhanced cost of European labour employed by the company or employed in the manufacture, transportation and handling of the stores which we have to purchase. The total average cost per man per shift of underground day's pay men and contractors went up from 20s. 5d. in 1913 to 39s. 6d. last year, an increase of 93.4 per cent. In the case of reduction workers there was an increase of 85.4 per cent. in the cost per man per shift worked of day's pay men. The cost of white labour per native employed rose from £43 18s. in 1913 to £76 4s. in 1921, an increase of 73.6 per cent.

I am including in the costs not only the wages, but other disbursements such as holiday and sick leave pay, etc., to which I have already referred.

The changes that have taken place in recent years in the miners' phthisis laws have involved a very heavy additional burden on the mining industry, as will be seen from the following table:—

Amount spent by the company on miners' phthisis, including insurance fund and compensation fund:

Per underground employe.

	Per annum			Per shift worked		Per ton milled		Per fine oz. of gold produced	
	£	s.	d.	s.	d.	s.	d.	s.	d.
1910	-	-		—		—		—	
1911	2	3	0	0	1.6	0	0.2	0	0.6
1912	15	4	9	0	11.3	0	1.7	0	4.6
1913	41	2	6	2	6.3	0	4.1	0	11.8
1914	53	3	7	3	3.4	0	5.1	1	4.4
1915	39	1	2	2	4.8	0	3.6	0	11.8
1916	36	7	2	2	2.8	0	3.8	1	0.4
1917	34	2	2	2	1.1	0	3.7	0	11.9
1918	28	11	10	1	9.5	0	3.4	0	10.5
1919	42	13	3	2	8.1	0	5.0	1	3.3
1920	71	19	5	4	5.6	0	7.4	2	0.2
1921	72	16	3	4	6.5	0	7.9	2	2.6

The reckless prodigality of the Union Legislature in this matter is unprecedented in the history of compensation for industrial disease. The present cost per shift worked of the miners' phthisis contribution is equal to over 20 per cent. of the average cost per shift of European underground day's pay men and contractors in 1913.

As regards stores, the prices of primary products, such as mealies and meat for feeding native labourers, have fallen, but stores the price of which depends on white wages are still high, averaging at the end of March about 60 per cent. above the 1913 quotation. The substantial increase made in railway rates in recent years has added largely to the cost to the mining industry of stores and power. For instance, in the case of mining poles grown in the country the railways now get more than the grower.

Labour Unrest.

There was a certain loss of output and considerable additions were made to the costs last year on account of labour unrest and strikes. In February, owing to a dispute on another mine, a sympathetic strike was called, with the result that operations were suspended for eight days. In November there was another strike, which commenced at No. 5 shaft on November 9, was extended to the whole mine on November 26, and terminated on December 5.

This strike was called because of the dismissal of an official who refused to discuss his grievances with the general manager except in the presence of a representative of the Mine Workers' Union. Nothing was gained by the men through these strikes; they lost wages, and they caused extra expense and loss of profit to the company.

As you are aware, this year we have witnessed one of the most disastrous labour upheavals that has occurred in the history of the Rand. The strike of the day's pay employes and underground contractors of the gold mines commenced on January 10. The extreme element among the labour leaders gradually gained control, and a general strike throughout South Africa was declared by the Augmented Executive of the South African Industrial Federation to take effect as from Tuesday, March 7, and this culminated in a rebellion, which was suppressed by Government forces. The strike was declared off as from March 17, and the men resumed work on the Chamber of Mines' terms on Saturday, March 18.

The strike was caused in the first instance by the refusal of the leaders of the men to face the facts of the situation and to agree to such reductions in wages and changes in working conditions as would make it possible for the low grade mines to continue working with the currency price of gold well under 100s. per fine ounce. Some of the leaders of the men, perhaps a majority, also wished to further schemes designed to transfer the effective control of the mines to the workers.

Tribute to the Staff.

As I have already shown, the strike involved us in heavy expense and considerable loss of profit, but I am glad to say that no serious damage was done to our property. The results of the strike and the rebellion might have been infinitely more disastrous had it not been for the magnificent and untiring efforts, often at great personal risk, of the general manager, the sectional managers and officials in protecting the company's property and in carrying on essential services.

I regret to say that several of our officials were attacked and ill-treated by strikers, but fortunately no lives were lost. In this connection we should not overlook our great indebtedness to the police, who, although far too few in numbers, displayed courage and resourcefulness under extremely harassing and difficult circumstances.

I should also mention the exemplary conduct of the natives, due no doubt largely to the ability with which they were handled by Mr. McKenzie, our chief compound manager, and his assistants. You will, I am sure, approve of the resolution which your directors passed cordially thanking the general manager, the managers and the staff for the signal services which they rendered to the company by their loyalty and devotion during the trying and dangerous period of the strike and the subsequent rebellion.

In conclusion, I desire to place on record our sincere acknowledgments of the valuable and loyal services rendered to us by Mr. Stuart Martin, consulting engineer, Mr. A. J. Walton, the general manager; Messrs. A. V. Lange, A. van Velden and T. Little, sectional managers, and the other members of the company's staff at the mine and in the head office. I also wish to add an expression of our appreciation of the excellent work done for us by Mr. J. E. Healey, general manager of the Consolidated Main Reef Mines and Estate, Ltd., who acted as general manager during Mr. Walton's leave of absence. Mr. R. Beaumont, who served us well for many years, resigned his position as manager of the eastern section in October last in order to take up an appointment in Trinidad.

I now beg to move that the directors' report, balance sheet and accounts for the year ended December 31, 1921, be received and adopted.

The Report and Accounts were adopted.

* * *

DURBAN-ROODEPOORT DEEP.

Reduced Working Costs.

Future of the Mine.

Mr. Frank Raleigh presided at the annual meeting of the Durban Roodepoort Deep on June 2, and in reviewing the position said:—

During the past year there was an improvement in the tonnage milled and in the value of the yield per ton; also a decrease in the working costs. These favourable factors produced a material increase in the working profit earned, and had it not been that the average price realised for the gold was 5s. 3d. per fine ounce below the price obtained in 1920, a further profit of £28,350 would have been made; as it was, the working profit earned totalled £36,490, being an increase of £22,808 above the working profit of 1920. During the last month of the year under review a working loss was made of £2,372, consequent on the heavy fall which then took place in the price of gold.

After providing for interest, etc., the net profit carried to appropriation account is £27,780. Of this sum £20,399 was appropriated for capital expenditure made during last year and in 1920. Whilst the company had cash assets on hand at the end of the year totalling £40,509, its liabilities amounted to £33,006, the difference, £7,503, being the credit balance of appropriation account.

Development Results.

The development footage accomplished during the past year showed an increase of 4,096 feet and averaged over 1,000 feet per month, which has not been equalled since 1915. The east and west inclines were sunk 172 feet and 73 feet respectively; the former reached a depth of 172 feet below the 15th level, and the latter a depth of 86 feet below the 17th level. Driving was chiefly confined to the 14th and 15th levels on the Main Reef, and 15th, 16th and 17th levels on the South Reef. Of the footage in reef formation, 83.7 per cent. was payable. A tonnage of 354,600 was developed, of an average value of 6.7 dwts., the quantity being sufficient to replace the past year's tonnage mined, whilst the value was slightly lower than the tonnage developed in the previous year.

Ore Reserves.

The ore reserves on re-calculation are practically of the same tonnage and value as at the end of 1920. The consulting engineer points out, however, that there are now more available stope faces and more points of attack for future development. These matters are important, as they indicate a better general mine position and will enable the breaking of rock for the mill to be facilitated and the ore reserves to be increased in the future more rapidly.

The consulting engineer, in his report, draws attention to the increase in the working costs since 1915, amounting to no less than £155,000 for last year, equal to 10s. 1d. per ton, or an increase of over 41 per cent. Against this can be set the price obtained for gold above standard, which last year was equal to 7s. 2d. per ton. There is thus a difference on balance of 2s. 11d. per ton on the wrong side, representing £46,500 decrease in profits based on the tonnage milled during last year as compared with 1915.

Labour and Working Costs.

It was apparent towards the end of the year under review that a low-grade mine such as ours could not survive the disabilities I have just referred to, much less could it meet the heavy decline in the price of gold which had occurred unless a drastic reduction was made in the working costs.

In consequence of the position in which this company, in common with many other mines on the Witwatersrand, found itself towards the end of last year, certain alterations in the conditions of the employment of Europeans in the gold mining industry were proposed by the Chamber of Mines as from February 1 last, which resulted in a general strike of all mineworkers being called by the South African Industrial Federation. The strike lasted from January 10 to March 17, when the men returned to work on the Chamber's conditions.

During the first three months of this year the company milled only 27,393 tons, of which about 6,000 tons were sorted from development dumps. This curtailment of operations was due to the strike to which I have referred, and a working loss of £39,371 was made for this period. This loss more than absorbed the whole of the profit earned during last year.

From January 1 last to March 31—which includes the strike period—the company only lost on balance about 200 of its native labour force. This low wastage is a very fortunate circumstance, but the retention of the force made the strike expenditure very heavy. In consequence of there being a full supply of native labour at the mine on the resumption of operations after the strike, a fair tonnage was milled for April, and a working profit of £1,600 was made there being a reduction of 4s. 8d. per ton in the working costs as compared with 1921.

Operations Reviewed.

During the last three years and four months the Company has milled [illegible] tons and produced gold to the value of over 1½ million pounds, which not only resulted in no profit but in a total loss of over £2[illegible]. During this period it expended over £100,000 on capital account. These results have landed the company into debt and from having over £92,000 worth of cash and cash assets at January 1, 1919, the company had a net liability of £[illegible] at the end of last month. As matters stood at the end of last year the company was working to no other purpose than adding to its existing debt.

In contrast with these results I might mention that prior to the period of high costs brought into being by the late war, the average annual profit of the company was £44,400 for the four years ending December 31, 1917, from a gold recovery yield no higher than that obtained during the past three years. It is no wonder that the consulting engineer states in his report that it is "an intolerable state of affairs."

We have a mine which is somewhat unique in its consistency of values. Its life, as represented by existing ore reserves and intact claims, is quite a long one as far as can be seen and it is the only remaining mine in the Roodepoort district.

There is no reason why it should not provide a long career of prosperity to the district, its employes and its shareholders if it is given a reasonable chance by the Government on the one hand, and the mine workers on the other, the one by relaxation of unnecessary burdens, and the other by better efficiency in the use of labour and stores, and whole-hearted support in any measures of economy introduced by the management.

The Future

It remains yet to be seen whether, as a result of the reforms which have been introduced following the strike, the mine can continue working and face the inevitable further fall in the price of gold which must sooner or later take place, until standard price is reached.

On the basis of last year's recovery yield the present price of gold above standard is equal, in the case of this company, to only 2s. 8d. per ton. Whilst working costs for May are expected to be below the average of last year, they will be quite 5s. per ton above those of 1915, and I am of the opinion that a further reduction must be made forthwith if the company is to be put on a sound financial basis.

The southern vertical shaft sinking programme has been in abeyance since June, 1920, owing to working losses, and you will gather from the report that the board does not now contemplate the resumption of shaft sinking. Until it can be shown that on the basis of standard price of gold the mine can earn reasonable profits from which the necessary capital expenditure can be provided for shaft sinking and equipment, there is no intention to commit the company to any further expenditure in this direction. You know the shaft attained a depth of 2,272 feet and that £1[illegible]3,760 have been expended on its sinking and equipment. The arrangements made in 1918 for financing the capital expenditure on the shaft and its equipment are still in abeyance; in the meantime the company is being financed by the Central Mining and Investment Corporation, Limited, and Rand Mines, Limited.

I am glad to say that the supply of native labour remains satisfactory, the company now having a force of 3,150 an increase which is only [illegible] below the numbers at the end of the year.

In regard to the enemy shares in our company, you will probably have seen from the Press that the Central Mining and Investment Corporation, Limited, have concluded negotiations with the Custodian of Enemy Property for the purchase of a large block of enemy shares under his jurisdiction. Included in this block were approximately 15,000 shares of your company, which were offered to your board by the Central Mining and Investment Corporation, Limited, at the price paid by that Corporation, namely, 2s. per share, plus 5 per cent. commission, and a pro rata share of the expenses of the transaction.

Your board has decided to purchase these shares, and to cancel them, thus reducing the capital of your company by a like amount. The necessary arrangements for the reduction of the capital of the company consequent on the cancellation of these shares will be made at a later date.

In conclusion I should like to record the board's appreciation of the loyalty and devotion to duty of the manager, Mr. C. Glyn, and his staff during the recent upheaval. The West Rand was comparatively quiet, but nevertheless the officials faced great risks and difficulties in our company's interest, and I am sure I voice the feeling of all shareholders when I thank them for all they have done for our company.

I also wish to record our appreciation of the continued good attention given to our mine by the consulting engineer, Mr. Stuart Martin, and the other head office officials.

I now beg to move that the directors' report, balance sheet, and accounts for the year ended December 31, 1921, laid on the table, be received and adopted.

The Report and Accounts were adopted.

* * *

ANGLO-AMERICAN CORPORATION.

Sir Ernest Oppenheimer's Review.

Many Interests.

Diamond and Gold Mining.

Labour Questions.

Future Policy.

In the absence of Sir Ernest Oppenheimer, Mr. F. R. Lynch, deputy-chairman, presided at the annual meeting of the Anglo-American Corporation on June 3, and said:—

Your chairman, Sir Ernest Oppenheimer, left for Europe a few weeks ago on an urgent business visit, and requested me to express to you his keen regret that he would be unable to preside at this meeting to-day. Our corporation, as you know, [illegible] diversity of interests, and it is of the utmost importance to our affairs, especially in these critical times, that our chairman should keep in intimate touch with London and New York.

Before he left, Sir Ernest Oppenheimer prepared a review of the corporation's activities for the past year, and with your permission I will now present it to you.

The annual general meetings of all the companies in which we are financially interested have been held during the past week or ten days, and, as in past years, a copy of the chairman's speech in each case will be forwarded on request to shareholders in this corporation, in order that they may have the opportunity of keeping themselves fully posted as to the position of the various concerns. I propose therefore to refer briefly only to the more important affairs of each company, starting with the Consolidated Diamond Mines of South-West Africa, Limited.

Diamond Interests.

The Anglo-American Corporation remains by far the largest shareholder in the Consolidated Diamond Mines of South-West Africa, Limited. Our holding consists mainly of 8 per cent. debentures which are convertible into shares at par at any time before they reach maturity in October, 1929. I do not think the excellence of this investment is fully appreciated, and I would therefore like to draw your attention to some of its prominent features.

The debentures bear interest at 8 per cent. per annum free of all Union taxation, and are redeemable at par in October, 1929, unless, of course, they have been converted into ordinary fully paid shares before that date. Under the debenture trust deed, the diamond company is required to set aside a portion of the profits each year so that a sufficient sum will be accumulated to redeem all the debentures when they fall due in 1929.

If the debentures are converted into shares just before maturity, the trust fund will be released, and the company will have at its disposal from this source a sum in cash equivalent to 8s. per share on its then total share capital.

The depression in the diamond trade became accentuated as the year 1921 advanced. The policy of caution in the face of the crisis, which the board of the Diamond Company evinced in passing the dividend at the end of 1920—although the company had sufficient funds in hand—was very wisely continued in 1921, first by curtailing production, and finally by suspending mining operations altogether, in order to conserve the company's cash resources to the greatest possible extent.

Thus the Diamond Company's expenditure, in addition to its debenture interest, was reduced to a small figure for running expenses and its cash funds are sufficient to meet its commitments for a considerable period. But the directors, wishing to make the position of their company doubly secure by providing against the remote contingency that the acute depression in the diamond market would continue without improvement for so long as to exhaust all their funds, approached our corporation for temporary loan facilities if the necessity should arise. As sponsors of the Diamond Company and the holders of the majority of its debentures, and having in view the Diamond Company's substantial cash resources, which would be augmented if any diamonds were sold, we agreed to advance a sufficient sum, should the company's funds become exhausted, for the payment of its debenture interest to June 30, 1923, and its running expenses to the end of that year.

I am pleased to say that sales of diamonds have already been effected, and I regard it as unlikely that the Diamond Company will require any assistance from us at all.

The financial position and the arrangement of the affairs of the Diamond Company are such that it can face the present depression in the trade with patience and confidence: in other words, it can subscribe to and carry out, without misgiving, the policy of "not forcing diamonds on an unwilling market." This policy has helped the diamond trade over every crisis in the past, and it will be found just as efficacious now.

It is pleasing to record that the best relationship exists between the four big producers in South Africa, De Beers, Premier, Jagers, and the Consolidated Company, and that all these companies follow an identical policy with regard to the marketing of their diamonds.

It is also gratifying to be able to tell you that your corporation has established friendly relations with the Societe Internationale Forestiere et Miniere du Congo, who own or control the Congo and Portuguese diamond fields which contain the only important diamond deposits outside the Union. I hope that I shall be able to cement and strengthen these friendly relations during my visit to Europe to the advantage of both producers, and thereby promote the stability of the diamond trade. I am pleased to be able to say that our reports from London indicate that signs of improvement in the diamond market are increasingly manifest, that the trade is successfully passing through the present severe ordeal, and that a distinct improvement in the diamond trade can confidently be expected in the not too distant future.

South-West Diamond Mining.

It is impossible to forecast the date of the resumption of mining operations in South West, since it depends upon the diamond market, which is an uncertain factor, but the directors of the Diamond Company, in the words of their chairman, "now have under consideration the possibility of resuming production during the current year . . . if the improvement in the diamond market is maintained with strong indications of continuance." With a view to cheapening future costs of production and greatly increasing its capacity at a nominal expenditure, advantage has been taken of the suspension of operations to make extensive alterations to the central plant at Kolmanskop. The general manager and consulting engineer of the company are hopeful that this work will be successfully completed before very long.

In addition, further testing of the deposits has been carried out at several points on the property. This work has been done under the supervision of the various caretakers and has, therefore, entailed little further expenditure. In the development of the south block, particularly, this testing work has been attended with very gratifying results, and the proved reserves, which were formerly estimated at between 14 and 16½ million carats have been added to by at least one million five hundred thousand carats.

Rand Selection Corporation: The Rand Selection Corporation is principally interested in gold mining properties, although it also possesses valuable assets in townships, freehold property and plantations. The result of its operations for the past year was satisfactory, and dividends of 15 per cent. and 12½ per cent were declared, amounting to £165,000.

Brakpan Mines, Limited: Our interest in this company is through the large shareholding of the Rand Selection Corporation, and owing to our ownership of the Schapenrust claims.

The result of the year's operations was satisfactory. The tonnage crushed at 659,500 tons, was 63,000 tons in excess of the 1920 figure, and costs were lower by 2s. 5d. per ton.

The balance of revenue over expenditure for the year amounted to £494,545. This is £52,000 less than the previous year, but as the gold premium received was £265,339, against £336,164, it is apparent that, on the standard value of gold, the profit for 1921 was higher than during 1920.

In addition to the above amount, the appropriation account was credited with the sum of £100,619, representing the proceeds of gold placed to reserve. This reserve was created in order to assist the company to meet heavy capital commitments in connection with the equipment of the lease area, and was therefore transferred to appropriation account. Over and above this amount represented by the gold reserve, the directors decided to utilise a portion of the profit for capital expenditure.

Dividends declared during the year totalled 30 per cent., absorbing £255,000.

The results of development, as revealed by the ore reserve position, are not so satisfactory as hoped for. A large development footage was accomplished, a portion of which from the Nos. 3 and 4 shafts—owing to station arrangements and, in the older portion of the mine to faulting, etc.—was necessarily off reef. Of the footage sampled, 41.2 per cent. was payable, the inch-dwt. figure being slightly lower than during the preceding year. The ore reserve showed a decrease of 103,237 tons, remaining, nevertheless, at the substantial figure of 2,423,230 tons, the value being 8.61 dwt. over 68.13 inches.

The really important feature of the year's development, however, is reflected in the position arrived at in respect of the development of the lease area. The No. 3 and 4 shafts have both reached the reef. At No. 4 shaft development is well under way with encouraging values being obtained in several of the headings. At the No. 3 shaft the main connection with the present mine has already been completed, thereby enabling the mine to proceed with the vigorous development of an area of great potential value.

The position now reached of being able to undertake the exploration of the lease area from these new shafts may be said to mark the beginning of a period of the utmost importance in the development of the property.

The amount received by our Corporation from Brakpan Mines under the sale agreement of the Schapenrust claims was £[illegible].

Springs Mines.—Although this mine is producing on a considerable scale the output is still not commensurate with the area of the property. For this reason a vigorous and extended programme of development is being carried on, with a view to building up an ore reserve which will permit expansion of the company's milling operations to an extent more in accordance with the magnitude of its claim area. The nominal milling capacity was about 40,000 tons per month during the past year, while the extension of the reduction plant, which is now approaching completion, will increase its capacity to a nominal 50,000 tons per month. It has recently been decided to further increase the capacity of the plant to 60,000 tons per month.

The tonnage milled during 1921 was 484,750 tons at a cost of 29s. 8.36d. per ton for a yield, based on the standard value of gold, of 37s. 2.50d. per ton. The tonnage milled was in excess of that for the previous year, whilst the costs were reduced by 1s. per ton. The reduction in costs is most welcome, and it is hoped that, following on the present reorganisation of underground work and the bringing into operation of the addition to the reduction plant, a further substantial reduction in costs will result.

A large development footage was accomplished, of which 53.8 per cent. proved to be payable, the average value of the reef sampled being 30.74dwt. over 22.10in., the total inch dwt. figures being 679 as against 581 during 1920. The excellent development results are reflected in the large reserve, which at 3,056,231 tons shows an increase of 330,053 tons for the year. The value, at 8.92dwt. is somewhat higher than for the previous year.

As at Brakpan Mines, the essential feature is the practical completion and linking up of No. 3 shaft with the other parts of the mine, thereby affording further facilities for the rapid development of the unexplored areas.

The profit earned was £397,803 some [illegible] less than in 1920 owing to the fact that the amount received by way of gold premium showed a reduction of £[illegible].

Two dividends were declared, each of [illegible] per cent., the amount distributed being £197,[illegible].

West Springs.—The work of opening up the West Springs property has proceeded satisfactorily, and the excellent progress made in shaft sinking has been maintained in the primary development headings. In March of last year the No. 1 shaft cut the reef at a depth of 3,890ft. After the necessary work as regards station arrangements had been completed, the east haulage was extended to a connection with the haulage driven from Springs Mines, the connection being effected early in the year.

The reef at No. 2 shaft was ascertained to be considerably deeper than was hoped, and, as the east haulage from No. 1 shaft provides a second outlet via Springs Mines, the sinking of No. 2 shaft was suspended for the time being, the Board being of the opinion that the available cash resources of the company could most profitably be employed by concentrating every effort on opening up the area between No. 1 shaft and Springs Mines, the development of which is now being rapidly proceeded with.

More recent development has disclosed better results than were obtained at the initial point where the reef was cut in the No. 1 shaft. Especially in the north-east diagonal haulage from this shaft reef of good width and value is being exposed. The first payable values were encountered in April and continued practically until the end of May. During that time a stretch of 512 feet has so far been opened up, the average value of which is 12.05dwt. over 25.56in., equivalent to 308in.-dwt. This footage includes a distance of 240ft., which averages 10.9 dwt. over 36in. or 393in.-dwt.

During the same period four new faces were started, the sampling results of which were as follows:—North-east haulage, 1 E drive: 80ft. sampled, 33.4dwt. over 11.9in., 397 in.-dwt.

North-east haulage, 2 E drive: 85ft. sampled, 27.5dwt. over 14.2in; 390 inch dwt.

South west haulage raise: 80ft sampled, 25.3dwt. over 27.5in.; 696 inch dwt.

East haulage raise: 145ft. sampled, 11.5dwt. over 24.8in.; 285 inch-dwt.

Springs Mines is obtaining good values in the western portion of its property immediately adjoining West Springs boundary. Development in this area has proved conclusively that the richer ore runs in distinct shoots, and their location and direction is so indicated in Springs Mines workings that we anticipate with confidence their continuance into West Springs property.

The working agreement entered into with Springs Mines, Ltd., in September, 1918 has greatly facilitated the development of the West Springs property.

Fortunately, little damage was done to the property during the strike, and on the resumption of operations the mine was speedily dewatered and development work is now in full swing.

At the end of the year the company had about £190,000 still to be called on its partly-paid share capital, and in addition had cash and cash assets amounting to about £120,000, making a total of £310,000.

Transvaal Coal Corporation.—At the last annual general meeting shareholders were informed of the coal interest acquired by the corporation. Our holdings are situated in the Witbank-Middelburg area, which district is pre-eminent as a source of supply in the Transvaal owing to its favourable mining conditions and the great width and high calorific value of the coal to be won from selected areas.

A confirmation of this view is expressed in the report of the Coal Commission, 1921, as follows:

Paragraph 92: "For the export and bunker trade the Transvaal Coal Owners' Association only supplies coal from nine collieries in the Witbank district. The grade of the coal from these collieries is the highest produced in the Transvaal, and the association guarantees buyers that any coal supplied by it will not have a calorific value below

12 5. [illegible] the [illegible] these nine collieries, which lie close [illegible] in the Witbank district."

Paragraph 14 of the same report: "The quality of the coal required for [illegible] natur- [illegible] the best that can compete against British and other coals. For example, it is for this reason that in the Transvaal only the better class coal in the Witbank area has been able to establish itself."

Referring now to the [illegible] in which we are interested, I have to advise you that since the last report the testing of the various farms held under option by means of boreholes has been completed, and to-day the coal rights over 20,537 morgen of ground are either owned or held under option. Other options previously held were abandoned owing to the unfavourable results of boring operations.

The work to date points to several areas of great potential value, the boring operations having indicated over 200,000,000 tons of recoverable coal of an average calorific value exceeding 13lbs./lb. over a mining width of 9ft.

Further information in regard to the Witbank area has been furnished in a recent paper by Dr. E. T. Mellor, in which he says:

"As a result of recent operations it will probably be within the mark to say that in the Witbank district alone one thousand million tons of coal, of a calorific value of 12½ and over have been proved, of which by far the greater portion is of a value in the neighbourhood of 13."

On this basis, therefore, you will note that 20 per cent., or one-fifth, of the above tonnage, is indicated to be within the company's holdings.

Another determining factor in the selection of these areas was their excellent strategic position in respect of future railway construction. The Bethel-Middelburg line is definitely located and passes over your areas, and the topographical features of the district make it reasonably certain that any railway construction from Minaar eastwards will traverse your holdings.

Pending the construction of either of the above lines, the area must lie dormant, but when the necessary transport facilities are available, the enterprise will be on a sound competitive basis with the best of the existing collieries in the Witbank district.

Financial.

The year 1921 witnessed very severe financial and commercial depression the world over, and consequently it was a period of great uncertainty. Your board therefore thought it prudent to pursue a cautious policy, and no new business was entered into. That accounts for the absence, in the 1921 accounts, of revenue under headings which figured in previous accounts.

If you will refer to the profit and loss account attached to the annual report, you will observe that our revenue for the year amounted to £258,600, which simply represents dividends received on various shareholdings, interest on debentures, and interest earned on cash balances. This revenue must be considered very satisfactory when it is remembered that we have considerable sums invested in companies which have not yet reached the producing stage; that Brakpan and Springs are opening up new lease areas, and have not yet reached their full capacity; and, further, that in consequence of the depression in the diamond market, our large shareholding in the diamond company, apart from debentures, was not dividend-earning during the period under review. We have every reason therefore to look for considerable increase of [illegible] in the future.

The expenditure was kept at the lowest possible limit in Johannesburg, London and New York, and, including directors' fees, amounted only to £1,381, [illegible] fees. I must point out that remuneration to the permanent directors, which is only payable when dividends are declared, amounted to £5,989, and is provided for in the appropriation account.

The payment of the dividend absorbed £159,701. The only other item in the appropriation account calling for comment is the £65,000 written off investments. This was done in pursuance of the policy of writing down investments to the market prices as at December 31 in the case of quoted securities, and to conservative figures in the case of unquoted securities. Our unappropriated balance is £177,953.

A few remarks on the balance sheet will conclude my financial review. Our cash assets were "sundry debtors and debit balances," £570,655, earning interest, plus a small amount of £511 earning no interest at the bank, which makes a total of £571,166. Our cash liabilities on the other side of the balance sheet were sundry shareholders £232 and sundry creditors and credit balances £444,380, which makes a total of £444,612, showing a surplus of £126,554.

Of cash assets, nearly £500,000 was money either then accrued as dividends or debenture interest, or was at immediate call, while of the £444,380 due by us under the heading sundry creditors and credit balances, the sum of £250,000 represented loans on fixed deposit, and the balance was held at call. Our investments amount to £3,245,000, and if we add to this the £126,000 by which our cash assets exceed our cash liabilities, we arrive at a grand total of assets amounting to £3,371,000, whilst our share capital remains unchanged at £3,194,028.

Labour Conditions in South Africa.

Your corporation has such large sums invested in gold mining, and its success depends so largely on the economical and efficient working of the Far East Rand properties in which it is interested, that I think the recent industrial upheaval through which the industry has passed calls for some comment from me.

In order to grasp the full significance of the position, it is necessary to examine dispassionately its deeper underlying causes, and to estimate its ultimate effect, rather than to be influenced by the points actually in issue and the regrettable occurrences in March, which, by their nature and their proximity, are conducive neither to a true perspective nor a sound judgment.

The Labour movement started from 1914 with the reasonable objects of improving the [illegible] of labour, raising the standard of living of white workmen, and securing increased wages to meet the rising cost of living and the currency depreciation which resulted from the war. During the war and after, the employers gave way to the demands of labour from time to time, because it was recognised that the great increase in the cost of living warranted increases in wages and that labour conditions called for some amelioration. But labour took excessive and unfair advantage of the abnormal circumstances and the generosity of the employers, who were manifestly reluctant to bring about a stoppage of gold production, which was regarded as an essential war service.

The trades union movement did not stop with the realisation of its primary objects. It advanced further and developed into a determined effort to capture, for its own advantage, the management and control of private enterprises. This movement, aggravated by economic circumstances — such as the diminution of the gold premium, which meant in all cases very much reduced profits, and in many cases actual losses —made it quite evident that sooner or later the employers would be forced to assert their undoubted right to manage their own businesses, and thus restore efficiency and economy. A struggle which would settle once and for all whether trade unionism should manage the mines or whether that function should be restored to its rightful repository had to be both prolonged and bitter.

Early in the war organised labour had entrusted their cause to a body called the "Industrial Federation," which, after several refusals, obtained recognition from the Chamber of Mines. As long as the Federation pursued the legitimate aims of labour they met with great success, increased their prestige, and, I believe, both workmen and employers were satisfied. But in the hour of trial the Federation was found wanting. Their own communications to the Press after the revolution show that they could not prevent their organisation from falling into the hands of unauthorised and unscrupulous men of extreme views, who used their usurped power to the danger and detriment of the community, and even of the State itself.

It is not surprising that the Chamber found it impossible any longer to recognise the Federation, which had proved impotent. The mining industry made it perfectly clear at the same time that this decision was not aimed at trade unionism proper, but that it was willing, and that it was its intention, to treat in future with such unions as represented the men employed in the industry itself.

The Chamber of Mines.

It was a necessary corollary to the ever-increasing strength of the Federation after recognition, that the power of the Chamber of Mines, which was the negotiating body on behalf of the employers, should also steadily grow, and thus further reduce the authority of the boards of directors and the managers of individual mines. The non-recognition and decline of the Federation must also make a distinct difference to the powers vested in the Chamber of Mines by its individual members.

The managers have had restored to them the powers which they held before the Federation became prominent, and I feel confident that only good can come of the alteration. Managers will once again feel their responsibilities intimately, not only to the company, but also to the employes, and, if tact and consideration are exercised on both sides, a much better atmosphere is bound to result.

Speaking for the companies in which we are specially interested, we expect managers to run their mines economically and efficiently, but also with as little friction as possible. Managers and officials know that they cannot carry out their duties successfully unless there is goodwill between management and workmen, which can only be brought about by treating employes with all fairness and consideration and in return the men must render a fair day's work for a fair day's pay.

Good results can only be obtained when there is goodwill and an absence of suspicion on both sides, and it is hoped that a new feeling will eventuate, so that the happenings of the early part of this year will be forgotten and never repeated. Differences of opinion are bound to arise from time to time, but I cannot see why they should result in a strike if both parties endeavour to realise the "other person's" point of view, and really try to find a solution of the trouble. I look forward now to efficient and economical exploitation of the mining industry, or, in other words, a new era in gold mining in South Africa.

Question of Differentiation.

There is one more aspect of the recent controversy upon which I would like to touch. It has been suggested in various quarters that one way to minimise unemployment and to keep the largest number of Europeans employed in gold mining might be to differentiate between high and low grade mines.

Such a differentiation is based neither on logic nor economics nor equity. The number of European miners required on a given gold mine, if healthy, safe and economical working is the aim in view, cannot possibly depend upon the gold contents of the ore taken out. The wages and salaries paid are either fair living wages and just remuneration for the services rendered, or they are not.

Overhead charges in every well-run business enterprise must be kept to the lowest possible limit, and directors of a gold mining concern would not be justified in ignoring possible economies simply because their mine happens to be high grade. To do so, indeed, would not only be bad business, but would be a breach of their trust.

If the aim is to find permanent employment for the mining population, and to make it attractive for the South African youth to take up mining as a profession, then the problem must be, not how to keep the largest number of low grade mines going, but how to make the largest tonnage of low grade ore payable, whether it be contained within a so-called low grade mine or within a high grade proposition. In this connection, it is opportune to emphasise that low grade ore is not confined to low grade mines.

Future Policy.

The future policy must not be based on the premise that the mining enterprises now working on the Witwatersrand cover all the gold-bearing ground that can be worked, or that even with official encouragement nothing new can be found or opened up in other parts of South Africa. Everything possible should be done to encourage people to find money for new mining enterprises, whether it be gold on the Rand or in other parts of South Africa, or whether it be coal, copper or tin.

Mining is so risky an undertaking, and on the Witwatersrand with its deep shafts, so very costly, and the failures are so many, that one should not begrudge the big returns paid by some successful mines, which in many cases only average the losses of shareholders who have in the past put up their good money for the development of these fields in ventures which have not been successful. It should be a matter of congratulation that good luck is sometimes met with in mining. It is the lure of the occasional big return which induces financiers in South Africa and overseas to find again and again the money for new enterprises.

If the principle were laid down in this country that the unemployment on the gold mines may be solved by examining the bank balances of the richer mines, and forcing them to spend their balances in the employment of redundant men simply because they appear for the moment to be able to afford it, then capital will indeed be frightened away from South Africa, and that, I am sure you will agree, would be little short of a national calamity.

I am confident that any impartial enquirer will find that differentiation between mines, whilst leading to the immediate employment of some extra men, is in the permanent interests neither of the men, nor of the State, and would have far-reaching effects to the detriment [illegible] development of South Africa.

Before concluding my remarks I desire to record our appreciation and thanks to the secretarial and engineering staffs in Johannesburg, London, and New York for their excellent services to the Corporation during the year.

The extensive development and equipment of the gold mining properties in which we are interested, and the reorganisation of mining methods and conditions, and the important duties in connection with our diamond and coal interests have entailed a great amount of work which has been ably and successfully supervised by our consulting engineer, Mr. Carl Davis and his technical staff.

The report and accounts were adopted.

S.A. TOWNSHIPS, MINING AND FINANCE CORPORATION.

The twenty-second ordinary general meeting of shareholders of the South African Townships, Mining and Finance Corporation, Ltd., was held at the offices of the Corporation in Jeppe Arcade on June 6. Sir Julius Jeppe, chairman of the Corporation, presided, and among those present and represented by proxy were African Land and Investment Company, Limited, Messrs. Amsterdamssch Trustees Kantoor, Sir Abe Bailey, Bart., K.C.M.G., M.L.A., Alfred Barker, G. M. Blundell, S. C. Davies, Major-General G. F. Ellison, W. J. Harris, Lieut.-Colonel W. Dalby Jones, Walter Kentish, D. B. MacLeod, Baron de Nieuwburgh, R. G. Schwarz, Skeen and Thomas, H. J. Sykes, F. Mann, E. M. Hind, and W. E. Drummond, secretary, representing in all 1,375,397 shares out of a total issued capital of 1,976,106 shares.

In moving the adoption of the report and accounts, the Chairman said:—

As the report of the directors has dealt with most of the figures in the balance sheet and has pointed out the difference in the items between this year and last year, it would be useless to deal at length with those figures. I will, however, with your permission, refer to the principal items therein.

The profit on the year's business, viz., £154,680 13s. 8d., must be considered as entirely satisfactory, if we take into consideration the depression which hung over us during the greater part of that period, and this profit justified us in again declaring a dividend of 10 per cent., which was paid in March this year and which absorbed £98,805 6s.

The usual fluctuations have taken place in our accounts. Large reductions have been made in amounts owing to us, and our share investments have been increased by a considerable sum. A list of your shareholdings is on the table for your information. Of course, it must be remembered that the value of these shares was calculated at the market price obtainable on December 31, when, as you will no doubt recall, the condition of Johannesburg was already unsettled; as usual, no credit was taken for those of our shares which stood below market value on that day, these being taken in at their book value; and it was due to this position and to the fact that we also made ample provision for any possible depreciation, which it is hoped and believed will be of only a temporary nature. After making this provision we go forward to the new year with a credit balance of £148,878 4s. 11d. at appropriation account, and a reserve account of £110,708 18s. 8d.

Reduction in Expenditure.

We have been able to make a reduction in our current expenditure of about £17,000, and look forward to a further reduction during the present year. Dealing now with your assets. Township and these properties stand at £339,781 [illegible] This represents the book value of [illegible] Jeppestown, Belgravia, Troyeville, Wolhuter, Malvern, New Doornfontein, Jeppes South, Bellevue, Auckland Park, Brixton, Hurst Hill, Ferndale Township, Kew Township, half share in Bellevue East, half share in Lorentzville, Spes Bona Leasehold, and the following suburbs of Pretoria, viz., Waterkloof, Bailey's Muckleneuk, New Muckleneuk, Brooklyn and a number of erven in the centre of the City of Pretoria and the suburbs of Arcadia, Sunnyside, Pretoria West, etc., also a number of blocks of offices, shops and halls, known as Market Buildings, Pretoria. These properties comprise 13,413 stands, erven and lots, of which 4,583 are sold in freehold, 3,119 in leasehold (producing annual licences or rents) and 5,711 still for disposal.

Farm Properties.

£338,680 13s. 7d. represents our farm properties which consist of 1,354,635 acres. A tabulated list of these properties is attached to the balance sheet. During the year we have disposed of 8 farms, in extent 29,128 acres. We acquired 15 farms with an area of 33,721 acres. Owing to the general depression the demand for farms has fallen off very considerably, although prices have not receded very much. This is due to some extent to the action of your company, as well as that of other land companies in granting purchasers every facility for making their payments over extended periods. Amongst these properties is one block of 27,619 acres which has been earmarked for an irrigation scheme.

We have already spent a considerable sum of money on it by way of surveys and the necessary investigation required for the selection of the site for the proposed weir, etc., also on taking the legal steps required to obtain the sanction of the Water Court for this scheme (and I am glad to say we have been entirely successful in the application) and on making several miles of canals. The original intention was to erect a weir which was to irrigate about 2,500 acres, but on further investigations by our engineers it was ascertained that with a justified increase of expenditure, by way of raising the height of the weir, about 12,000 acres would probably come under the canals. The work in this direction is still proceeding, and there is no doubt about it that you have in this proposition one of the finest irrigation schemes in the country—the soil and the climate being ideal for the growing of tobacco, lucerne and wheat.

Houses and Buildings.

Now we come to houses and buildings, £144,892 11s. 11d., which represents the value (after ample provision for any depreciation has been made) of 58 residential houses, built or in course of erection, chiefly in the popular and fashionable suburb of Waterkloof, and a large block of shops and residential flats on the Market Square, Pretoria, known as Clewer Buildings; also the Power Station and the Garage at Waterkloof; and School Buildings and Post Office at Auckland Park.

£13,305 13s. 6d. represents mining ventures and mineral rights. This includes all the mineral rights retained by us on 115 sold farms, with an area of 884,028 acres. It is naturally impossible to value these mineral rights, but the possibilities are considerable, as many of them are in highly mineralised zones. To illustrate this, I might quote one farm in the Eastern District of Transvaal which we had sold, but on which we had retained the mineral rights; on this farm a very promising gold discovery has been made, which is now being exploited; a portion of another farm in the western part of the Transvaal is now being proclaimed by Government as an alluvial diamond field, and your company [illegible] [illegible] [illegible] [illegible] farm in the [illegible] district which has been, and is still, returning us a considerable sum by way of [illegible] licences, etc. These mineral rights, I may add, include already proved coal rights; they stand in our books at £1 per farm. There is no need to say much about the farming ventures, livestock, plantations, etc., standing in our books at £[illegible]

As I have told you at previous general meetings, our duty of acting as pioneers in uninhabited districts was fulfilled some years ago, and since then we have gradually restricted our farming operations with a view ultimately of withdrawing from them entirely.

The amount now remaining on this account chiefly represents cattle, sheep, horses, buildings, and other improvements like fencing, etc., on farms still being run by us. Although farming generally speaking has had a more or less disastrous year, there is no reason to be disheartened about it in any way whatever. South Africa has ever been a country of ups and downs, but in the end it has always won out, and so it will do in this instance.

The amount of £358,410 11s. 6d. [illegible] a substantial decrease during the year; [illegible] of farms and stands, houses and freehold conversions. As I said at the beginning of my speech, your directors had to temporise with regard to the instalments payable on farms, and assist purchasers by extending terms of payment.

The amount of £70,060 13s. 4d. for sundry debtors and dividends receivable has been virtually wiped off since the accounts were made up.

Share Investments.

Now we come to the item of your share investments of £753,300 18s. 3d. As already stated, a list of these shares is on the table for your inspection. All the shares have been taken in at cost price when they are below market value or at market value.

Satisfactory Position.

Now, gentlemen, this finishes my view of your company's business during the year, and I feel sure that you now share my conviction as to the satisfactory position of your affairs. I suppose we have had just about the most terrible time in every industry and undertaking we have ever experienced. We came through out of that trial in a most marvellous manner: the storms of the last few months have cleared not alone the atmosphere [illegible] and I am convinced that the terrible days of stress and nights of worry will ultimately prove to be of [illegible] benefit to the whole of the Rand.

Just as heavy storms clear the atmosphere and extend our view, so the catastrophe which overtook us has cleared our vision and a saner and a more healthy outlook obtains to-day. Speaking about those bad days we must remember the great and courageous attitude taken up by the staff on all the mines and also the staff of head offices, and I would here like to record the directors' great appreciation of the services rendered throughout the year, and especially those rendered during the first three months of this year by our staff, every one of whom, unless physically unfit, gave his services freely and willingly and did his share to protect life and property in Johannesburg and to preserve law and order.

The report and accounts of the Corporation were unanimously adopted and Sir Willem van Hulsteyn and Mr. J. Emrys Evans, C.M.G., who retired from the directorate by rotation, were re-elected.

— THE —
UNION STEEL CORPORATION
(OF SOUTH AFRICA), LIMITED.

OFFICES :
LEWIS & MARKS BUILDING,
JOHANNESBURG, Corner Simmonds and President Streets.

SALES DEPARTMENT :
P.O. Box 4480 Johannesburg.
Telephones: 166 and 6301.
Tel. Add.: "COVER" Johannesburg

WORKS : : VEREENIGING.

MANUFACTURERS OF

Steel Bars, Rounds, Squares, Flats, Angles and Tees. Steel Rails, 16lb., 20lb., 25lb. and 30lb. per yard to British Standard Sections.
Fish Plates. Grizzley Bars. Tube Mill Bars and Pegs in High Carbon Steel.
Steel Castings in Manganese Steel and High Carbon Steel up to 15 tons; also Shoes, Dies, Heads, Cams, Tappets, Crusher Parts and Gearing—The Products of Electric Furnaces.
Reinforcing Bars to Government Specification, in lengths up to 70 feet.

CONTRACTORS TO UNION GOVERNMENT, SOUTH AFRICAN RAILWAYS, MUNICIPALITIES AND MINES.

Leeuwpoort (African Farms) Tin Mines, Limited.

(Incorporated in the Transvaal.)

CAPITAL £275,000
In 275,000 Shares of £1 each.

DIRECTORATE:

S. JULIUS JEPPE, Kt., C.B.E., Chairman.
F. M. HIND, A. G. GILL, W. J. GAY, B. SOUTHWELL.

EXTRACTED FROM THE REPORT FOR THE YEAR ENDED 31st DECEMBER, 1921.

PROPERTY.

The Property of your Company consists of:

(a) Freehold Farm Leeuwpoort No. 241[illegible], Waterberg, of an area of 3,962 morgen 2[illegible]5 square roods, being the entire farm.

(b) Mineral rights over portion, 1,099 morgen [illegible] square roods, of the Farm Rietfontein No. 2414, Waterberg, adjoining Leeuwpoort.

FINANCIAL.

Working Revenue and Expenditure Account shows a loss for the year ended 31st December, 1921, of		£20,[illegible] 0 5
Plus Interest and Depreciation written off		10,[illegible]
		£[illegible]
Less Rents and Income Tax, 1920 over-estimated	£1,[illegible]	
Balance at Appropriation Account, 31st December, 1920	1,[illegible] 10	
		[illegible]
Carried to Balance Sheet		£28,692 11 9

DEVELOPMENT AND ORE RESERVES.

The total development and exploratory work accomplished during the year, excluding shaft sinking and station cross-cuts, was 1,006 feet (average of [illegible] per month for nine months only).

	Short tons	Value [illegible]
Total Ore developed, etc.... ...	67,914	2.4 per cent.
Total Ore at grass	2,900	1.14 per cent.
Total	70,814	[illegible]

MILLING AND CONCENTRATING.

Mill ran 17 stamps, 2 Nissen and 1 Californian [illegible] hours basis, 114.71 days; ore milled 17,5[illegible] short tons; tons per diem run, 152.92 short tons; duty per stamp per diem, 8.99 short tons; concentrates won, [illegible] long tons; average grade of concentrates, 53.2 per cent. met. tin; average grade of ore treated approx. 1.6 per cent. met. tin.

The accumulated, low-grade, stacked, vanner tails (Ferruginous) which had accumulated [illegible] during the past seven years, amounted to 10,400 short tons on the 12th February, 1921. At the end of the year a total of 9,401 tons had been treated by the concentrating plant.

The full Report and Accounts may be obtained from the Secretaries (South African Townships, Mining and Finance Corporation, Limited), The Jeppe Arcade, Commissioner Street, Johannesburg (P.O. Box 5036).

RHODESIAN TEAK & MAHOGANY

FOR MINING & BUILDING PURPOSES,
ANT, ROT AND DAMP RESISTING.

Sleepers, Guide Blocks, Deals, Scantlings, Flooring (Machined for Secret Nailing) and all kinds of Purpose-Made Joinery, Fencing Posts, Etc.

PRICES MODERATE.

RHODESIA NATIVE TIMBER CONCESSIONS,

35, PERMANENT BUILDINGS, HARRISON STREET,
JOHANNESBURG.
Box 5530—Phone 3568—Yard: Eloff St. Extension

CARBIDE

ALL SIZES
IN 1, 5, 10, 50 lb. TINS
and 100 lb. DRUMS

Apply: MANAGER,
RAND CARBIDE, LTD.,
SOUTH GERMISTON
'Phone 252 Germiston.

Roodepoort United Main Reef Gold Mining Co., Ltd.

TENDERS ARE HEREBY INVITED
FOR THE RIGHT TO PURCHASE OR TRIBUTE
the following portions of the Roodepoort United Mine

A. Kimberley East Section.
B. United Section.
C. No. 3 Section.

All these sections are equipped with hoisting plants, headgears, track, trucks, etc., which can be taken over at a valuation, if desired.

Full particulars can be obtained from the Manager, Roodepoort United Main Reef G.M. Co., Ltd., P.O. Box 172, Roodepoort.

Tenders should reach the Technical Adviser, Box 1242, Johannesburg, not later than noon on FRIDAY, 30th JUNE.

The highest, or any tender, will not necessarily be accepted

"PALMETTO"
PACKING
[illegible]
under extreme conditions.
After all, it's the length
[illegible]
Let us send you working samples of both forms, so that you may try it out — no charge.
[illegible]
BARTLE & CO., LTD.,
JOHANNESBURG.
[illegible]

THE TRANSVAAL
COAL OWNERS ASSOCIATION
(1910), LIMITED
Head Office: GENERAL MINING BUILDINGS, JOHANNESBURG
P.O. Box 1197. Tel. Add: "COALSALES."

HIGH-CLASS STEAM COAL.

From the WITBANK DISTRICT of the TRANSVAAL COALFIELDS.

Steamers calling at the Ports of Lourenco Marques and Cape Town can be supplied with Bunker Coal at short notice and with quick dispatch.

Large quantities of the Association's Coal are regularly exported to India and elsewhere.

Capacity of Collieries - - 600,000 tons per month.

THE ASSOCIATION'S COAL IS REGULARLY USED BY
South African Railways and Harbours
Caminhos de Ferro de Lourenco Marques
Clan Line of Steamers, etc.
Empreza Nacional de Navegacao
Union Castle Mail Steam Ship Co., Ltd.
Ellerman Harrison Line, etc.

AGENTS IN LOURENCO MARQUES:
Mann, George & Co. (Delagoa), Ltd.
Allen, Wack & Shepherd, Ltd. Delagoa Bay Agency Co., Ltd.
AGENTS IN CAPE TOWN:
Mann, George & Co. (South Africa), Ltd.

EXPLOSIVES
FUSE
DETONATORS
ACIDS
CHEMICAL PRODUCTS
SHEEP DIP
CATTLE DIP
ETC., ETC.
CAPE EXPLOSIVES WORKS, Ltd.
P.O. DYNAMITE FACTORY,
SOMERSET WEST, C.P.

PRICE'S
CANDLES
(Made in South Africa)
FOR
MINING
AND
GENERAL USE
Burn Brightly & Economically
TRADE MARK
PRICE'S (South Africa) LIMITED
FACTORIES: CAPE TOWN & JOHANNESBURG
HEAD OFFICE: BATTERSEA LONDON

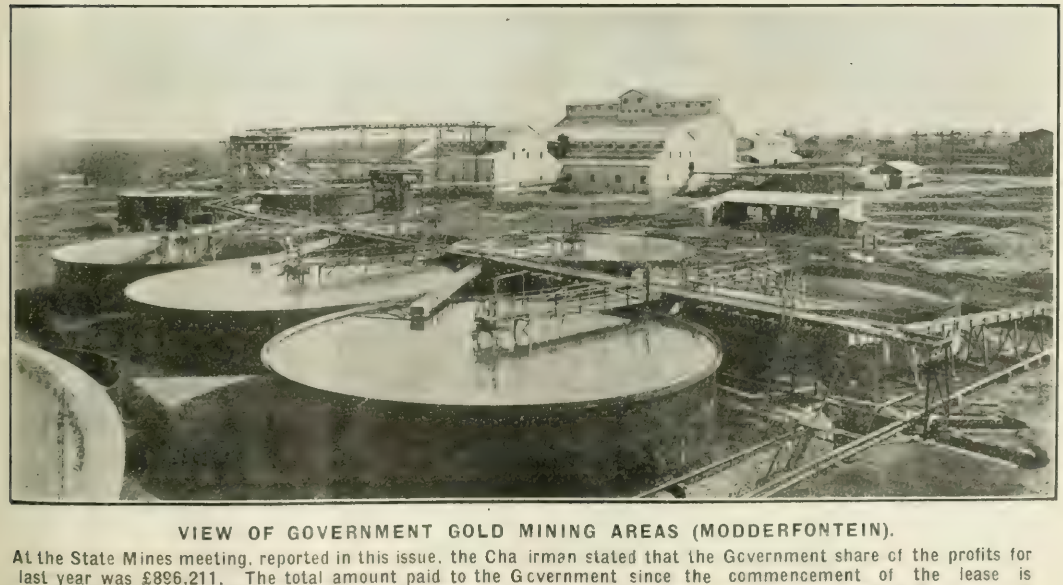
Truth about Iridium—Latest Diamond Rush—Rhodesian Mining Progress.

The South African
Mining & Engineering Journal
THE ONLY MINING AND ENGINEERING WEEKLY PUBLISHED IN AFRICA.
Established 1891.

Vol XXXIII , Part I JOHANNESBURG, TRANSVAAL, SATURDAY, JUNE 17, 1922 No. 1603.

Two Great Barnato—State Mining Enterprises.

VIEW OF NEW STATE AREAS.



VIEW OF GOVERNMENT GOLD MINING AREAS (MODDERFONTEIN).

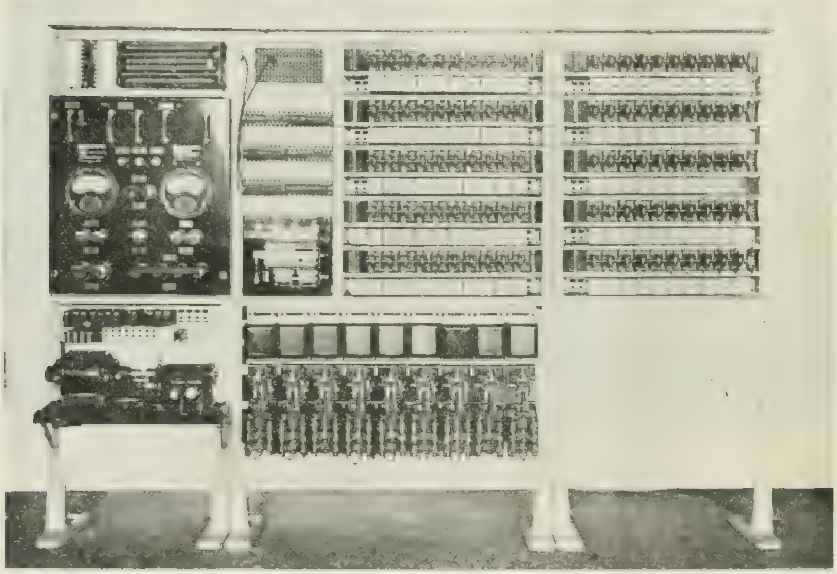
At the State Mines meeting, reported in this issue, the Chairman stated that the Government share of the profits for last year was £896.211. The total amount paid to the Government since the commencement of the lease is approximately £3.054.845, while the shareholders have received in dividends for the same period the sum of £2.550.000.

SIEMENS BROTHERS

AUTOMATIC TELEPHONES

In addition to a number of
PUBLIC EXCHANGES FOR LARGE TOWNS
we have supplied scores of
PRIVATE AUTOMATIC EXCHANGES

Our EXPERIENCE is wide—Our SATISFIED CUSTOMERS numerous



PRIVATE AUTOMATIC EXCHANGE BOARD 100 Working Lines

CHEAP TO MAINTAIN—SIMPLE TO WORK

IMMEDIATE DELIVERY FROM LOCAL STOCK

Representatives in South Africa:

A. J. G. SIMPSON, A.M.I.E.E.
African Life Buildings, 85, St. George's St.,
CAPE TOWN.
P.O. Box 239, Cape Town. Telephone 1202 Central.

G. H. B. BERNARD, A.M.I.E.E.
9-10, Cotts Buildings, Rissik and Fox Sts.,
JOHANNESBURG.
P. O. Box 7404, Johannesburg. Telephone 408 Central.

Telegrams : "SIEMENS."

The Truth About Rand Osmiridium.

RESULTS OF RECENT RESEACH—A VALUABLE CONSTITUENT OF BANKET ORE—IRIDIUM PRICE FLUCTUATIONS—COMMERCIAL USES.

In view of the interest which is being taken in Osmiridium the following valuable notes on the subject were read before the Chemical, Metallurgical and Mining Society of South Africa at the May meeting by Mr. J. R. Thurlow. They contain a record of what has been done locally hitherto, and more particularly the results which have been obtained during more recent research on this valuable constituent of banket ore.

The first serious attempt at commercial realisation known to the writer was made by the late Mr. M. Torrente during the period 1912-1913, when he succeeded in isolating and fusing into metallic form a small quantity of the metal Iridium. Mr Torrente carried out a considerable amount of research work on concentrated black sand resulting from milling operations from one of the mines in the Central Rand and, with a view to establishing commercial relationships, was in correspondence with well-known firms in England and on the Continent for some considerable time. The next and more successful attempt of this kind occurred during the latter part of 1920 on a mine situate in the Eastern Rand section. It may be noted, however, that periodically during the intervening period more or less frequent references were made to the fact of the presence of rare metals other than gold in concentrated products resulting from metallurgical operations. In the main, however, these references were concerned mostly with analytical work; quite frequently it was a subject for argument in connection with the assaying of concentrates dealt with by the Co-operative Smelting Works.

Successful Isolation.

The nearest approach to its successful isolation from the commercial aspect, viewed in light of present-day knowledge, would appear to be when a small quantity, containing 80 per cent. Osmiridium and 3 per cent. Platinum, was passed round for inspection at a meeting of this Society, held in October, 1915*, when Messrs. W. H. Jane and F. Davey presented a paper on Clean-up room practice.

The history of the 1920 incident is worth recording as an instance of the benefit resulting from scientific training and its natural outcome in the shape of an intelligent interest in whatever work is being undertaken. The curiosity of an Assayer led to a discussion as to the nature of a certain blue-black material which he had observed to form a ring around the outer edge of the material passing through a batea. As a sequel a small portion was collected which, on analysis, proved to contain a high percentage of Osmiridium. Subsequent investigation indicated that a natural concentration of this product was occurring in the clean-up room and advantage was taken of its incidence to evolve an economical process of recovery.

The Simple System Adopted.

After a good deal of experimental work in the direction of hydraulic concentration the simple system described herein was adopted and meanwhile gradual improvements are taking place which lead to increased efficiency.

In connection with the experimental work, it may be mentioned that a magnetic process was tested and while it was found that Osmiridium was attracted with the magnetic metallic iron to the various poles, probably due to the magnetic film covering, no real concentration was effected.

A description of the method referred to above as employed on Reduction Plants of the Rand Mines/Central Mining Group is as follows:—

Proceeding in the usual manner to grind in the clean-up barrel all black sands collected from the amalgamation plates and the products from the traps, mortor-box heads, Wilfley tables, etc. Pass the ground material through the batea also as usual, but take precaution to keep the final heavy concentrates remaining on the batea separate from the lighter portion which flows over the trap plate. By this means a product containing 40 per cent. of Osmiridium concentrate has been obtained, and where this is possible, the simplest method of further treatment is to pan off the base metals in a prospector's dish. The most satisfactory method at present of dealing with the product from the collecting sump of the batea is to pass it over a small table, which is covered with open-grained calico resting on fine mesh (100) screen.

The dimensions of this table may be made to suit the working space available; the tables at present in use are about 5 feet long by 2 feet wide, and are made with a small head box and distributing lip similar to those situated at the heads of the tube mill plates. The inclination of the table depends upon the material being concentrated and the operator can soon decide what this should be to obtain the best result. A grade of 20 per cent. is found to work very well, but as the table is usually a portable one and only set up as required, it can readily be adjusted to suit working conditions. The concentrate caught on the table is further dressed by panning and the product of this operation is treated by acid. It may be pointed out that as all operations prior to concentration on the calico-covered table are contributory to the ordinary routine, the operating charges per ton of ore treated are practically unaffected.

Typical Analyses.

The following table gives typical analyses of the results obtained by the above means after the product had been subjected to treatment with weak acids:—

	1.	2.	3	4.
	p.c.	p.c.	p.c.	p.c.
Iridium	43.9	44.51	37.86	33.25
Osmium	41.9	25.38	34.75	37.79
Ruthenium		10.50	10.04	10.47
Platinum	3.0	7.04	6.37	5.80
Rhodium	1.3	0.53	0.82	0.70
Gold	3.0	3.09	3.60	2.86
	93.1	91.05	93.44	90.87

(Analyses by R. H. Cooper, Rand Mines' Laboratory.)

---

* See "C.M. & M. Journal," October, 1915, page 67, et sequentes.

MINES DEPT. EXAMS.
CERTIFICATES AWARDED INSTITUTE.

MANAGERS' EXAMS., September, 1921, January, 1922.

We obtained 15 out of a total 22 certificates awarded in South Africa

	Metal	Coal	Totals
Ours	9	6	15
Rest of S.A.	4	3	7

Total for S.A. 22

OVERSEERS' CERTIFICATES.

During the past ten months we have secured **ALL** the Overseers' Certificates issued in South Africa, except 3 metal and 3 coal.

TUITION (Metal or Coal) by class, correspondence or privately

Mining Institute (Prof. Yates),
St. James' Mansions, Eloff St. Johannesburg

The following copy of a complete analysis of black sand was given to the writer by the late Mr. M. Torrente:—

Iron	35.32	per cent
Sulphur	41.27	
Copper	.05	
Lead	.03	
Nickel	.26	
Cobalt	.24	
Zinc	.48	
Arsenic	.33	
Silica	19.65	
Alumina	.50	
Chromium Oxide	.08	
Lime	.17	
Magnesia	.12	
Titanium Oxide	.95	
Oxygen Combined and Hygroscopic Water, Gold and Metals of Platinum Group	.61	
	100.00	

Fine Gold	1.55	ozs. per ton of 2,240 lbs.
Fine Silver	2.00	" " " " "
Platinum	3.43	" " " " "
Iridium	3.00	" " " " "
Palladium	.45	" " " " "

On sample as received.

As regards the amount of Osmiridium present in the ore milled, tests have shown that it varies from 1 ounce per 5,000 tons to 1 ounce per 15,000 tons. Taking the mean of these extremes, to arrive at a monthly output of 100 ounces Osmiridium 1,000,000 tons would have to be milled. The computation is made on tests carried out on mines situated on the Far East Rand. So far only negligible quantities have been isolated on mines west of the Modder Group.

Commercial Value.

The most valuable constituent of the concentrate is Iridium, which, however, is subject to violent fluctuations in price according to demand; thus it realised £120 per ounce two years ago as compared with one-fifth of this amount more recently.

Commercial Uses.

The chief uses of Osmiridium or the metals contained therein have hitherto been:—

1. Fountain pen points.
2. Contacts used in magneto points of the highest class of motor cars.
3. Irido-platinum alloy used in thermo-couples.
4. Hardening parts of certain dental instruments.
5. Watch and compass bearings.

S.A.R. Tenders.

Tenders will be received by the Secretary to the Tender Board, South African Railway Headquarters, Johannesburg, not later than noon on the dates specified, for the supply of the undermentioned:—

Glass, Plate and Sheet	12th June, 1922.
Soaps	12th June, 1922.
Leather and Leather Goods ...	12th June, 1922.
Disinfectant Fluid	26th June, 1922.
Disinfectant Powder...	26th June, 1922.
Antifriction Grease	26th June, 1922.
Red Oxide Paint in Paste... ...	3rd July, 1922.
Machine Oil	3rd July, 1922.
Coir Rope	3rd July, 1922.
Coir Door Mats	3rd July, 1922.

Forms of tender, together with full particulars, may be obtained from the Railway Stores, Capetown, Port Elizabeth, East London, Durban, Bloemfontein, the office of the Chief Railway Storekeeper, Park Station Chambers, Johannesburg; and the Town Agents, Johannesburg and Pretoria.

Mining Men and Matters.

Mr. R. Nye, of the Kolar Goldfields, is on a brief visit to the Rand.

* * *

It is notified that His Royal Highness the Governor-General has been pleased to approve of the appointment of Mr. Frederick Moss Blundell as Registrar of Mining Titles and Rand Townships Registrar, and with effect from the 18th May, 1922, *vice* Mr. Ronald Henry Greatorex, M.B.E., B.A., proceeding on pension.

* * *

The new officers of the S.A. Institution of Engineers are as follows:—President, Mr. J. W. Kirkland; vice-presidents, Messrs. T. G. Otley and R. Craib; hon. treasurer, Mr Edward Goffe; members of council, Messrs. P. M. Anderson, W. Buchanan, R. C. Atkinson, W. Elsdon Dew, J. H. Dobson, D. M. Davidson, W. Martin Epton, C. E. Mason, P. M. Newhall, John Orr, W. G. Nixon, A. Robertson and J. H. Whitehouse.

The directors of the Consolidated Gold Fields of South Africa have decided to postpone announcing the date of payment of a dividend on the First Preference shares until the results of the year ending 30th June, 1922, are known. The half-year's interest is not due until 1st July, but the results for the financial year 1921-22 can hardly be known until several months later. The interest on the Second Preference which was due on 1st April is still in abeyance. Both classes of share have cumulative preference rights.

NOURSE MINES' IMPROVING POSITION.

The old West Shaft (Henry Nourse), which was dismantled and re-erected last year on a concrete collar.

The Latest Diamond Rush.

MOSESBERG ACTIVITY—THOUSANDS OF DIGGERS PRESENT—PROMISE OF THE NEW FIELDS.

Mosesberg, the latest Vaal River alluvial digging, was proclaimed last week. For weeks back thousands have been thronging to the scene, and the proceedings passed off with little trouble.

Last of the Diamond Rushes.

After long anticipation and many bitter disappointments, especially to diggers in the old river areas, who had long looked forward to the proclamation of the area, Government decided—probably through force of political and Parliamentary circumstances—to proclaim Mosesberg in the old-fashioned catch-as-catch-can way. The recently inaugurated Board of Control with the best of intentions had made strenuous endeavours to introduce a new order of things by laying out Mosesberg on a well-ordered ballot system; but however desirable such a new method of opening up new areas in the interests of the alluvial diggers was concerned, such a course meant legislative enactments, and the Mines Department, like other Government Departments, who are anxious to modernise methods, found it impossible. In face of the popular demand for the proclamation of Mosesberg, Government had no other recourse but to decide in favour of the old-fashioned rush. Mosesberg may be regarded for geographical purposes as sixty miles from nowhere.

Scene showing the mushroom like growth of Mosesberg, which in a few hours became a busy mining camp.

Site of the Diggings.

It is on the Vaal River at a point lower than the old-established lower river riggings. The area proclaimed last week was four miles in length and two miles in breadth. It abutted what may be called the old Mosesberg diggings proclaimed in 1919, on which remarkable finds have been made, including a famous patch estimated at untold value. Taking a summary view of the new area from the point whence the proclamation was read, one may describe the new Mosesberg as a piece of typically Griqualand West territory embracing a wide horse-shoe formation of low-lying kopjes covered with wacht-en-beetje bush and kameel thorn. In the centre of this horse-shoe, in a pleasant little valley leading down from where the new township has sprung up with mushroom-like growth, the proclamation which set tens of thousands of diggers on their way to fortune or otherwise was read. The steady stream of vehicular traffic to the new rush, which has powdered the surface of all the roads leading to Mosesberg during the past few weeks, was intensified from the earliest hours of Friday morning. At a safe computation some 400 or 500 motor cars must have traversed the two roads from the east, the one running through Barkly West and Delport's Hope, and crossing the Drie Harts river, and the other via Schmidt's Drift, negotiating the Vaal by the pont. For some time there had been rumours of hopeless congestion at the latter, and it says much for the energy and enterprise of the pont proprietor that in actual fact phenomenal traffic was expeditiously dealt with. In addition to these long streams of petrol-driven vehicles the whole of the roads were dotted with ox, mule and donkey-drawn wagons carrying wood and iron houses, diggers' gear, stretchers, household requisites, kafir servants, and even fowls. The trip from Kimberley to Mosesberg was full of eventful interest. Mosesberg itself hours before the proclamation was a hive of industry. Diamond buyers' offices, cafes, diggers' huts, tents, shacs and bivouacs were springing up in all directions. The actual pegging took place at 11 o'clock and passed off quietly. It is estimated that the rush eclipsed all former South African records. Upwards of 2,000 people are said to have participated; and it is thought the diggings will yield good returns to those who work in a systematic, businesslike way and have some capital.

VERDITE MINES.

We learn that a big contract has been secured by the Verdite Mines, Ltd., for the supply of its talc to Europe. The installation of a very large crushing plant is contemplated, but whether this will be installed at the mine, in the Barberton district, or in England, in the vicinity of London, has yet to be decided.

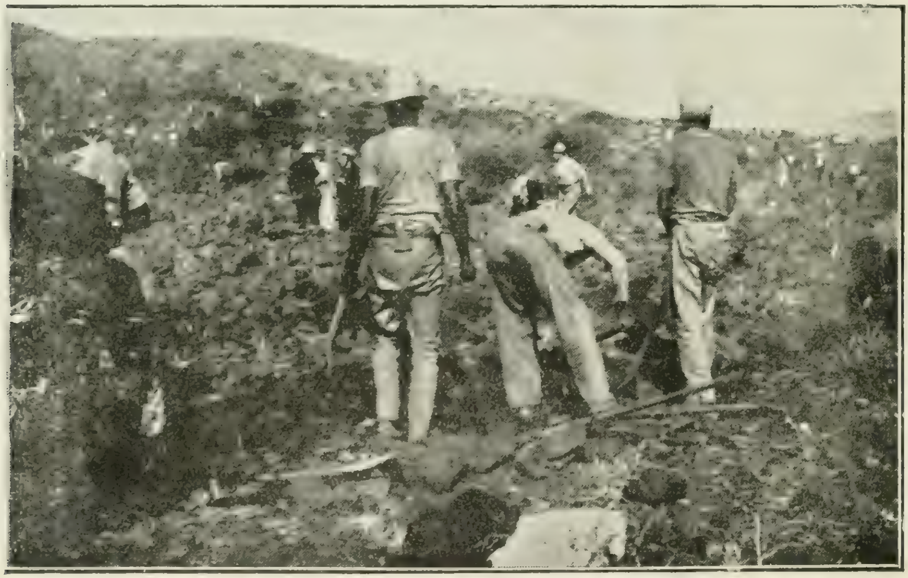
Messrs. J. R. Williams and W. Mears have patented a new process for recovering gold from its ores.

AGENTS WANTED.

An old-established American house, manufacturing excavating machinery—steam shovels and dipper dredges—is anxious to appoint a reliable agent in South Africa, who would look after their interests. Particulars can be obtained from the manager of this journal.

Scenes at the latest Diamond Rush.

Diggers Setting to Work to Clear the Ground at Mosesberg.



Removing the Overburden at the New Diggings.

THE NEW BELGIAN RAILWAY.

Remarking upon the report that General Smuts had promised to Rhodesia, when she should join the Union, to build the short-cut Sinoia-Kafue, and that when this extension materialises, the distance Elisabethville-Beira will be reduced from 2,608 kilometres ½ to 1,846 kilometres, the Brussels correspondent of the *African World* says: For the sake of comparison I will add that when the Lower Congo-Katanga Railway will have been constructed between Pangu, on the Kasai River, and Bukama, Elisabethville will be within 2,713 kilometres from Matadi; by this route there will be 725 kilometres of steamer (Pangu-Kinshasa). Further, if Beira is (according to the " Philip's Distance and Speed Tables for Shippers ") within 7,250 sea miles from Antwerp via Suez, and within 7,628 miles via Capetown, Matadi is at only 5,352 sea miles from Antwerp by the Campagnie Belge Maritime du Congo. Now, if we consider the gigantic Panda works as Katanga's centre, Matadi is nearer and Beira farther away by 129 kilometres 600 meters. The comparison is still more favourable to the all-Belgian route if we take as a centre the great hydro-electric works which the Union-Miniere intends to erect further westwards in the Katanga (the exact spot is not yet selected).

Future of South African Iron Industry.

EXPERTS' OPTIMISTIC VIEWS—LESSONS FROM AUSTRALIAN EXPERIENCE—REASONS FOR CONFIDENCE.

In the course of a recent discussion before the Chemical, Metallurgical and Mining Society of South Africa, optimistic references were made to the future of the iron industry in this country. We quote the more notable passages.

Speaking before the Chemical, Metallurgical and Mining Society, Mr. J. Henderson said: In the U.S.A. alone, in 1920, 36,000,000 tons of pig iron were consumed, which meant 70,000,000 tons of iron ore were consumed by American furnaces alone. Their resources must be feeling the strain of such an annual consumption as that. Now our resources in South Africa are practically intact, and we have large reserves. We have coal which makes excellent coke, and there is no reason that I can see why this country should not be able to make its own iron, not only for its own domestic requirements but also for export. The demand for iron will increase, and there is no reason why South Africa should not help to supply it. I need only quote the instance of Australia. Australia in 1907 started with practically the same size of furnace that is being put down at Newcastle, Natal, at present—that is to make 1,000 tons a week. That remained the only one in Australia that was working for some time, but in 1913 the same firm put down another blast furnace of about twice the capacity. Then the Broken Hill Proprietary Company, who had a very fine deposit of iron ore in South Australia, decided to enter the iron business on a big scale, putting down works at Newcastle, New South Wales. They started in 1914, and have now three big furnaces, and the latest report in regard to the last one that was blown in is that it is producing regularly 500 to 600 tons of pig iron per day, and by the report for 1921 the Broken Hill Proprietary Works at Newcastle were producing 1,000 tons of steel ingots per day. The works at Lithgow, N.S.W., have for several years manufactured rails and sections to highest tests and chemical specifications.

The Australian Federal Government set aside the sum of £150,000 for the encouragement of the iron industry, to be given at the rate of 12s. per ton of pig iron manufactured entirely from Australian materials, and also 12s. per ton of steel manufactured from Australian materials. This sum was earned by the iron industry of New South Wales and assisted in establishing it on a firm footing.

Australia Independent.

Australia therefore has practically made itself independent of outside resources in regard to structural steel, and everything else except the fine steel which Sheffield produces. With regard to steel rails, bridge material, and plates, Australia is now practically independent of outside resources. In addition to the benefits that ensue directly from the starting of iron works there are the subsidiary industries which they draw around them. For instance, at Newcastle, Australia, there is a wire works for the drawing of fencing wire, a galvanising works to make corrugated sheets which are rolled from steel supplied by the Newcastle Steel Works, a nail works has been put down also, and several subsidiary industries have been started which are getting their supplies from the Newcastle Steel Works. So far as I can see, South Africa ought to establish an iron industry more easily than Australia. I was in the pioneering of the iron industry in Australia for about 12 years, and know what the conditions are. At the Newcastle works, for instance, their iron ore is brought from South Australia, 1,500 miles by sea. Their limestone comes from Tasmania, also a long distance by water. The reason why they went to Newcastle was because the coal was there, and it is always advisable, if possible, to have it situated near the coal mines, because in the production of a ton of finished steel, coal is by far the largest item of raw material which is used. The works of D. and C. Hoskins, Ltd., at the Blue Mountains have to bring fully half of their coke from New South Wales, 150 miles distant, and with a climb of 4,000 feet. They also bring their iron ore from New South Wales, over 100 miles distant, so they have succeeded in establishing an iron and steel industry under conditions which are certainly not more favourable than our own, if indeed they are as favourable as in Natal and the Transvaal. If Australia can do it I am certain South Africa can; and I see no reason why she should not get to work at once and make this industry a complete success.

Professor Stanley's Views.

Professor G. H. Stanley, *inter alia*, said: Everything else was based on the iron industry, and one of the first and most important things was for a country to establish its own. A very little reflection would show that the essentials of modern civilisation—food, clothing, housing, and so on all depended on iron. To-day, the older civilised countries were using iron at such a rate that their sources were within a measurable distance of exhaustion. As Mr. Henderson had pointed out, Australia was an example of what a Colony had accomplished in this direction. Canada also had her own iron industry, and likewise such countries as China and Japan. But South Africa as yet had not got such an industry, although as they had heard to-night a start had been made at Newcastle, and he was sure they would all wish it success. Of course the consumption of iron in South Africa was small as compared with that of other parts of the world, particularly in comparison with the enormous quantities produced in the United States. Yet in 1913 there were imported into the Union over £5,000,000 worth of iron and steel manufactures of a kind, which could be, partly at least, made in this country by a comparatively small iron industry. Importation had grown rapidly since the war. Taking 1921, in the first six months nearly £7,000,000 worth of iron and steel goods were imported. That meant about £14,000,000 worth per annum, a considerable part of which was capable of being produced in South Africa.

Our National Resources.

That ought to be sufficient inducement to make us look into this matter closely, especially when we found all the natural conditions favourable. There was plenty of iron ore in the country and good iron ore. Dr. Wagner has stated that South Africa is second only to Brazil in the extent of its iron resources. We also had plenty of coal, and coal that would make coke; and our limestone resources were apparently illimitable. In the Cape Colony, for instance, there are whole mountains of limestones suitable for the purpose. We also had sufficient labour, and although our rates of pay for white labour were somewhat high, that fact was counterbalanced to some extent by the lower rates paid to coloured labour, so that our labour costs altogether should not be more than elsewhere. Therefore, taking everything into consideration it ought to be possible for this country to produce pig iron as cheaply as any country in the world, not even excepting India, which was probably the cheapest iron-producing country in the world to-day. Of course, we should require some assistance from the Government. That was always a vexed question, but Australia could not have done without such assistance, and we ought to expect the same help from our own Government. He had taken out figures regarding the iron consumption per head in some of the other countries of the world. In the four chief iron-producing countries the consumption varied from ·21 to 33 tons per head per annum. Taking our white population as 1½ millions, and assuming a consumption per head of one-third of a ton, which was the figure in the United States of America, our consumption would be about half a million tons, and this was likely to be exceeded in view of the industrial activity to which this country was looking forward.

Native Mine Labour.

DANGERS OF DISCONTENT.

Important Views.

A lengthy memorandum by the Joint Council of Europeans and Natives will be submitted to the Mining Industry Board. The Council has been formed to promote co-operation between Europeans and natives, and to investigate matters relating to the welfare of the native population. The memorandum states that: "In the opinion of the Council this is not an ordinary industrial dispute between European labour and capital, because the native worker is most deeply concerned, and it appears to the Council that the real problems before the Mining Industry Board are the position of the native labourer in South African industry and his relations to his European co-workers and employers. Without a definite policy and clear ideas on these fundamental matters industrial peace cannot exist in South Africa." *Inter alia*, the Council "cannot admit that any particular jobs on the mines or elsewhere should be reserved for Europeans as such, but at the same time adequate provision must be made for training Europeans to become skilled in every department of mining and in the skilled trades.

The Recommendations.

The recommendations of the Council are as follows:—

(1) That the status quo agreement of 1918 be abolished, and subject to considerations of health and safety, no obstacles should be placed in the way of natives obtaining added responsibility and correspondingly increased wages. The results of this agreement form an important part of what the native understands by "the colour bar," and cause grave discontent and unrest among native workers.

(2) That it is not desirable to regulate the ratio of Europeans to native labour in the mines of the Transvaal, as, if any such ratio becomes effective, it must raise costs, and whether effective or not it provides no real safeguard for the European worker, but is a danger to him, in so far as he relies upon it to keep him in his job, instead of depending upon the value of his work.

Getting the Best Results.

(3) That to encourage all organisers of European and native labour to train and develop the capacity of their labour forces is more likely to "effect economies, to promote efficiency and to secure the maximum field for employment of European labour" than any regulations. The problem is not to secure the maximum field for the employment of European labour in coal and gold mines, where it is possible that greater efficiency will be obtained by increasing the proportion of native labour employed. From the facts we have mentioned it is clear that any increase in mining efficiency, even if it be accompanied by the displacement of Europeans from the mining industry, must lead to a large number being employed elsewhere.

GOVERNMENT EXAMINATIONS.
METAL. RESULTS, 1921. COAL.

Total METAL MANAGERS Certificates
Granted in S.A., 1921 36
Secured by Students of Messrs. LUCAS & WOLFE .. 21
Balance for S.A. 15

7 COAL MANAGERS Certificates obtained in 1921.

Total OVERSEERS Certificates (Metal and Coal)
Granted in S.A., 1921 61
Secured by Students of Messrs. LUCAS & WOLFE .. 25
Balance for S.A. 26

Total SURVEY Certificates
Granted in S.A., 1921 11
Secured by Students of Messrs. LUCAS & WOLFE .. 9
Balance for S.A. 2

C. D. LUCAS & B. E. WOLFE,
MINING ENGINEERS.
OFFICES & LECTURE ROOMS: PERMANENT BUILDINGS.
Postal Address: Box 6301. JOHANNESBURG

(4) That the only method of enabling the largest number of gold mines to be worked is to reduce costs. Robbing Peter to pay Paul is a policy unsound in itself, and in this case of no practical use, since the available surpluses of the profitable mines are altogether insufficient to meet the position after providing reasonable interest on their own capital. Any attempt of this nature by crushing profits out of existence would destroy the only inducement there is for investors to provide new capital for South African industries and at the same time additional work for the increasing South African population.

In conclusion, the Council desires to draw attention to the danger of a native strike for higher wages and to the seriousness of it should it occur, in view of the fact that native labour is essential to all South African industries. Quite a small increase per boy per day on the present scale of efficiency would mean the closing down of a large part of the gold industry, and as a necessary consequence widespread unemployment and distress throughout South Africa.

Danger of Native Strike.

The Council believes that there is serious danger of a native strike unless greater opportunities are provided for the native labourer to advance himself, and unless he is paid according to the work he performs. No doubt this will mean doing away with the maximum average wage, which, as already stated, is specially objected to, but the Council is confident that the higher wages paid to trained natives will be more than counterbalanced by their greater efficiency.

The names of the following Europeans are appended to the statement: Rev. F. Bridgman, P. Ross Frames, D. C. Greig, Rev. Francis Hill, H. Hosken, J. D. R. Jones, H. Mayer, Rev. R. E. Phillips, O. D. Schreiner, H. M. Taberer, W. Fearnhead, W. Gardiner, J. A. Hamilton, Professor Jan H. Hofmeyr, L. Howe, Professor McMurray, Rev. W. Parker, Howard Pim, Saul Solomon.

Drilling and Dustiness of Air.

Notwithstanding all the effort made to introduce wet drills to prevent dustiness of air of metal-mine working places, says D. Harrington (supervising mining engineer, Bureau of Mines), there has during the past few years arisen in Australia and South Africa an impression that wet drills, including the Leyner type, actually cause undue quantities of finely divided ore and rock to rise into the air, these fine particles being chiefly attached to particles of fog or spray escaping from holes using water drills. This is said to have created consternation in the ranks of the mine operators, who have complied with drastic wet drilling regulations and purchased and operated various types of wet drills at no inconsiderable expenditure in both money and effort. In view of this situation and the fact that wet stopers are being rapidly introduced with considerable success in many of the metal mines of the United States, the writer, who has for the past five years been engaged largely in studying the dust problem in the metal mines of the West for the United States Bureau of Mines, has compiled the dust sampling of air of drilling places in 214 working places in 13 mines at time of drilling, using various types of wet and dry drills with upper, inclined, horizontal and some down holes. The result of these tabulations indicates that irrespective of the conditions in South Africa and Australia, the use of wet drills in the United States results in a decided decrease of dustiness of the surrounding air as compared with dry drilling, whether the holes are upper, or inclined or horizontal, and practically irrespective of the types of drill used. Nevertheless there are some dangers from dust in air surrounding wet drilling operations unless certain precautions are taken.

S.-W. Africa's Minerals and Transport.

In view of the reported gold discovery in South-West Africa, the following brief review of the mineral wealth and transport conditions in the territory is of interest.

The one-time German Colony in South-West Africa, which has been much in the public eye of late owing to the Bondelzwarts rising, is likely to loom more and more in public notice as time goes on. That the importance of developing this " mandatory territory " is even now engaging the attention of the authorities is shown in the public works programme of the South-West Africa Administration for 1922-23. This programme includes the building of several branch railways, the installation of large cold storage works at Walfish Bay, and the improvement in various ways of the actual Walfish Bay harbour. It is expected that these steps towards opening up the territory will have a considerable effect in the right direction upon general trade conditions. The whole situation is ably summed up in an article which appears in the May 9 issue of the " Bulletin of the Federation of British Industries." The following are extracts from this article:—

Mineral Wealth.

The whole belt of the Namib (coastal belt) is diamondiferous. Stretching from the Orange River in the south to the Kunene in the north, and averaging 30 to 40 miles in width, it is, owing to the difficult nature of the country, only assessible at certain spots, which are being exploited by either small individual companies or by the Consolidated Diamond Mines of South-West Africa. However, owing to the state of the diamond market, very little work is being done, hence the Administration, which is entitled to a 60 per cent. share, is practically without income for development purposes or adminstration generally.

Dr. Kuhn, the eminent German geologist, says of the same belt that it is richer in saltpetre than the coast of Chili.

The copper mines are handicapped in that coal does not occur in the territory. Owing to the high cost of imported coal the mines are compelled to ship the copper ore, which means that only the high-grade mines can be worked.

Tin, both alluvial and reef, has been discovered. The former has been worked for several years, but by very primitive means, so that but for the richness of the fields they could scarcely be made to pay. Large deposits of tinstone have recently been discovered in the Erongo Mountains, and the proposition has been taken over by a London syndicate, so that developments may shortly be expected.

Vanadium is being worked in the Grootfontin district by the South-West Africa Co. Tungsten had been worked in the Rehoboth district. Gold is known to exist, but payable reefs have not yet been discovered. Galena, asbestos, cinnabar, and many other metals are known to exist, but payable propositions have yet to be found.

Transport Conditions.

The territory is served by a central trunk railway which pierces the country north and south, and westward to Luderitzbucht from Keetmanshoop—Luderitz being the centre of the diamond fields—and from Windhoek to Walfish Bay. From Usakos, on the Walfish Bay line, the railway is continued further north to Grootfontin and Tsumeb copper mines—this is a narrow-gauge track. Recently the Administration has extended a branch line from Otjiwarougo to Outjo, the centre of a large farming area, a distance of 65 miles.

A new line is now being built (Union gauge) to Gobabis, a distance of 160 miles, and it is hoped that in the near future this will be extended across the Kalahari and link up with the Union railway in the neighbourhood of Mafeking. If this were accomplished practically all the Transvaal and Rhodesian goods and traffic generally would enter at Walfish Bay, so that this line would become the highway to the Transvaal and Rhodesia, saving two days by ship to Capetown, and shortening the railway journey by several hundred miles.

* * *

NAMAQUA COPPER.

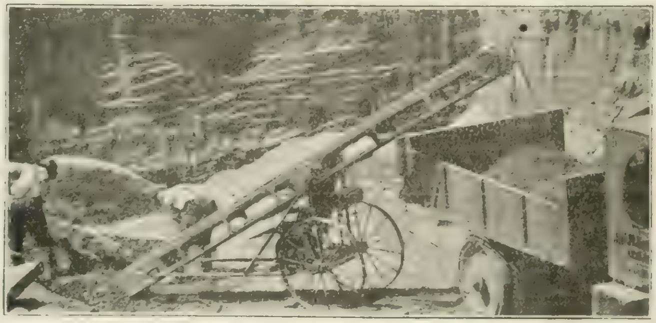
The annual general meeting of the Namaqua Copper Co., Ltd., was held in mail week.—Mr. T. V. Anthony, who presided, said that, after further exploration under the option which the company had held, and with the full concurrence of their mining superintendent, the Board had purchased the Success Mine, which adjoined their previous acquisition at Homeep, for £4,000, at which figure they looked upon it as a fair mining risk. The property extended over 200 acres, and had always been regarded as a low-grade proposition with a very extensive ore-body. Already some 20,000 tons of 5 per cent. ore had been opened up. They confidently expected that, in conjunction with the minerals separation process, which was now being installed, this new property would prove a valuable and continuous addition to the sources of supply for feeding the smelter. With regard to the other properties, the superintendent reported an increase of 7,000 tons of ore (representing 538 tons of copper) in the reserves, which was entirely due to development at the Homeep mine, in regard to the future of which they continued to have great hopes. The negotiations with the Cape Copper Co. referred to at the previous meeting had been brought to a successful issue, and they now had an agreement with that company which secured for the Namaqua Copper Co. terms of transport and shipping considerably more favourable than those which prevailed before they stopped smelting. It was, of course, not until this arrangement had been concluded that they were able to put forward the orders for the new plant now in course of erection, and this would explain why the progress with the latter was not quite so advanced as they had hoped it would be.

A SULLIVAN BORD AND PILLAR COAL CUTTER.

MADE BY THE SULLIVAN MACHINERY COMPANY,
CHICAGO.

"THE ARISTOCRAT OF PORTABLE BELT CONVEYORS."

EITHER OIL OR ELECTRICALLY DRIVEN.



MADE BY THE BROWN PORTABLE CONVEYING MACHINERY COMPANY,
CHICAGO.

FOR FURTHER PARTICULARS APPLY TO:—

THOMAS BARLOW & SONS (S.A.) LTD.

DURBAN.
P.O. Box 1011. Tel. Add.: "SHIPMENTS."
'Phones : .. .. 1, 1965, 2322, 2460.

JOHANNESBURG.
P.O. Box 6901. Tel. Add.: "SHIPMENTS."
'Phone .. .. 6503.

The Case for the Transvaal Coal Owners.

WHY THEY REFUSED ARBITRATION—CAPITAL AND DIVIDEND FIGURES—ORIGIN AND ADVANTAGES OF THE ASSOCIATION.

Voluminous evidence was [illegible] Mining Industry Board during last week [illegible] the coal mining interests and the men employed on the collieries. From the lengthy evidence given [illegible] we take a few extracts:—

Coalowners' Case.

The statement for the coalowners is prefaced by a short statement by Mr. John Roy, chairman of the Transvaal Coal Owners' Association, in which, after detailing the origin of the association, he states that the association purchases all the coal produced by its members at a basis price governed by quality of coal, geographical position, etc., and the business of the association is to market this coal on behalf of its members to the best advantage. If the price realised is in excess of the basis price the collieries are paid a premium; if less than the basis price, they suffer a proportionate loss. The association has no control in any shape or form over the actual management and working of the collieries. After nearly fifteen years' experience the members of the association are convinced that the methods adopted in marketing their product have been beneficial to all concerned, including the consumer. The general outline of the manner in which the association conducts its business is as follows:— Each colliery in the association is allowed a percentage of the trade, and it is thus able to regulate its labour force on the most economical basis and to the best possible advantage. The association disposes of the coal largely under contract, but there is a considerable floating trade within the Union which it has to cater for also. The chief market for expansion, however, is in the shipping trade, and great efforts have always been made to foster this trade. While successful up to a certain point, the association has had to fight against very great difficulties, amongst them being railage rates, shortage of trucks, difficulties at Delagoa Bay in connection with the handling of coal, and sea freights. Notwithstanding all this, Transvaal coal has secured a footing in the Eastern markets and elsewhere, and with anything like favourable conditions there is without doubt a great future before the South African coal trade. The proceeds of the sale of coal for each month are distributed under certain conditions embodied in the agreements with the collieries, and each colliery is paid in full for its coal output during the ensuing month. The administration costs of the association are under three farthings (¾d.) per ton, and it is doubted whether the sale of coal is effected anywhere else at such a moderate figure. In no case has the association raised its price to an abnormal figure, and this contention is borne out by Government figures covering a number of years.

Three Statements.

The evidence for the colliery owners is set forth in three separate statements. The first deals with the question of a reduction in colliery wages in the Transvaal and the Orange Free State. Statement No. 2 deals with wages paid, stores consumed, outputs, selling prices, capital invested and dividends paid in connection with the coal mines of the Transvaal, with statistics contained in the published reports of the Government Department of Mines and Industries. The years 1913 and 1914 have been taken as representing normal pre-war conditions for comparison with the years 1920 and 1921, when industries were still affected to a greater or less degree by the after-effects of the war.

Cost per Ton.

White wages, native wages and stores form the main items which go to make up a colliery's working costs. Summarising these three items, the following are the costs per ton:—

1913	2 11·74
1914	3 2·18
1920	4 10·21
1921	5 10·40

The Government Mining Engineer's reports give no figures nor details of the other working charges of the collieries, which comprise: Native recruiting expenses, native monthly passes, insurances, taxes, consulting engineers' fees, directors' fees, audit fees, rents or royalties, head office expenses, [illegible]

Value of Output.

The following are the outputs and output values of the Transvaal Collieries for the years under review:—

	Output tons.	Value.
1913	5,225,036	£1,142,598
1914	5,157,268	1,150,746
1920	7,180,124	2,187,681
1921	6,947,362	2,263,023

These represent an average pit-mouth value as follows:—

1913	4 4·48 per ton
1914	4 5·55 ..
1920	6 1·12 ..
1921	6 6·18 ..

The only possible line of expansion is the development of the export trade, but as this is entirely round coal which is the highest-priced, it is obvious that increased shipping orders, necessitating the dumping of large quantities of the smalls—as has often happened—raises the average selling price of the whole output, and, at the same time, owing to the dumping of smalls, raises the cost of production per ton. Any dislocation in the requirements of the inland gold mines and industries has a similar effect, as is shown by the slight increase in the average selling price in February, 1922. Owing to strike conditions, smalls were almost unsaleable, and the output for that month was composed principally of round coal—all the collieries dumping smalls heavily. The collieries quite recognise that this is not economic mining but the demand for smalls is always a limited quantity and no other course is open to them.

Capital and Dividends.

The details of these are shown as follows:—

	Capital Invested.	Dividends Paid.
1913	£4,034,301	£181,662
1914	4,195,936	209,633
1920	4,246,502	304,982

On the capital invested in the Transvaal collieries, the dividends paid represent a return to shareholders of: 1913, £4 10s. per cent.; 1914, £5 per cent.; 1920, £7 3s. 7d. per cent. Based on the capital invested in producing collieries only, the return was as follows: 1913, £5 2s. 1d. per cent.; 1914, £6 12s. per cent.; 1920, £8 0s. 10d. per cent. The returns for 1921 are not available. Only a certain number of the collieries contributed to these dividends; the others made no return to their shareholders. In 1913 out of 28 collieries 12 paid dividends, in 1914, out of 27, 16, and in 1920, out of 41, 14; and, so far as can be ascertained, 13 companies out of 39 paid dividends in 1921.

Refusal to Arbitrate.

A charge has been laid against the collieries for refusing to arbitrate. This arbitration proposal was put forward towards the end of December after the strike had been declared, operative on January 2nd. The chief reasons which prompted the Collieries to refuse arbitration were:—

(a) The negotiations relative to the proposed reduction in wages were started in September, and the Federation had shown no desire to discuss the position on a practical basis, nor had they suggested the desirability of taking advantage of the provisions of the Industrial Disputes Prevention Act.

(b) The increase in wages had been granted to relieve the burden of the pressure by the cost of living, and when living costs decreased it was natural sequence that the increases granted should be correspondingly reduced.

(c) Wages for similar work on the gold mines—which have set the wage pace for years past—were to be 24s. 6d. per shift on January 2nd, 1922, and the collieries saw no reason why they should be called upon to pay higher rates. As a matter of fact, their proposal was only to reduce their rate to 25s.

(d) The market price of coal had fallen, so that several of the collieries were working at a loss.

(e) On matters of fact or the interpretation of agreements, the Collieries were and always have been prepared to arbitrate, but on matters of policy they claim the right to manage their own affairs. No colliery can submit to arbitration when the award might result in its being forced to work at a loss or close down.

New Railways.

851 MILES TO COST £4,087,620.

Many Narrow Guage Lines.

Preliminary details of the new railway construction programme were announced by Mr. Jagger this week, and will be welcomed as relieving unemployed and opening up the country.

On Wednesday the Minister of Railways and Harbours moved "for leave to introduce a Bill to provide for the construction and equipment of certain lines of railway, for the electrification of railways, for the validation of certain rights and the construction of certain deviations, and for these purposes to confer upon the Governor-General certain incidental powers, and further to provide for the application to the cost of railway construction of the proceeds of the sale or lease of Crown Lands in certain circumstances."

The following is the schedule giving the route of the line of railway, approximate length, and estimated cost:—

Belmont to Douglas (agricultural railway), 53 miles, £198,114.

Dunswart to Apex, main line deviation via Benoni, 4 miles, £115,461.

Ermelo (Buhrmann's Tafelkop) to Lothair, 27 miles, £125,577.

Fort Beaufort to Balfour (two-foot gauge agricultural railway), 23 miles, £65,000.

Frankfort to Villiers, thence to a point on the Transvaal-Natal line, 51 miles, £269,420.

Franklin to Kokstad, 25½ miles, £132,192.

Franklin to Matatiele via Cedarville (agricultural railway), 47½ miles, £225,760.

George to Knysna, 42 miles, £296,820.

Harrismith to Warden (agricultural railway), 36½ miles, £196,059.

Heilbron to Petrus Steyn (agricultural railway), 31½ miles, £145,656.

Hercules to Magaliesberg (agricultural railway), 50½ miles, £257,196.

Kamfersdam to Winter's Bush, 35 miles, £130,410.

Klipdale to Bredasdorp (agricultural railway), 24 miles, £101,520.

Lydenburg to Olifantsportje via Chrigstad (agricultural railway), 71 miles, £398,168.

Nylstroom to Vaalwater (agricultural railway), 43¾ miles, £187,468.

Oudtshoorn to Calitzdorp (agricultural railway), 34 miles, £167,042.

Rustenburg to Boschhoek (agricultural railway), 17 miles, £64,141.

Senekal to Marquard (agricultural railway), 30 miles, £170,100.

Settlers to Tuinplaats (agricultural railway), 14 miles, £40,000.

Touws River to Ladismith (agricultural railway), 89 miles, £445,000.

Upington to Kakamas via Keimoos (two-foot gauge agricultural railway), 56 miles, £113,000.

Zastron to Wepener, 46 miles, £234,508.

Totals: Twenty-one lines, 851 miles, £4,087,620.

The Railway Construction Bill contains machinery for the acquisition of lands and rights required for the purposes of the railways, and confers on the Government authority to electrify railways, erect power stations, transmission lines, etc., acquire land for electrification purposes, and use surplus water of a public stream for the purposes of the power stations.

The Busy Man's Column.

WHAT TO READ IN THE TECHNICAL PRESS.

Mining and Metallurgy.

Coal Pillar Extraction from Two Seams.—Collirey Guardian, May 19.

The Origin of Drilling for Cores.—Colliery Guardian, May 19.

Iron and Steel.

German Competition for Foreign Rolling Stock Orders.—Iron and Coal Trades Review, May 12.

Blast Furnace Filling.—Iron and Coal Trades Review, May 12.

Engineering.

S.A.R. Locomotives.—S.A. Railways Magazine, June.

Electricity.

The Load Power Factor and its Measurement.—Electrical Review, May 12.

The Improvement of Electric Lighting Plants.—Electrical Review, May 12.

Protective Apparatus for Turbo-Generators.—Electrical Review, May 12.

Economics.

Labour Troubles in the Empire.—Colliery Guardian, May 19.

Safety First.—Colliery Guardian, May 19.

Engineering Economics.—Iron and Coal Trades Review, May 12.

Coal.

Coke from "Non-coking Coals."—Iron and Coal Trades Review, May 12.

INVESTORS' DIARY.

Forthcoming Company Meetings.

(a) Annual general meeting; (s) special or extraordinary general meeting.

Meetings will be held in Johannesburg unless otherwise stated.

June 30.—Crown Diamonds (s), 12 noon.

Position and Prospects of the New Kleinfontein.

REVIEW OF RECENT EVENTS—PROGRESS OF DEVELOPMENT—REDUCED COSTS OR CLOSING DOWN —SIR WILLIAM DALRYMPLE'S SPEECH.

Sir Wm. Dalrymple, K.B.E., presided at the 26th ordinary general meeting of shareholders in the New Kleinfontein held on Friday, May 26th. In moving the adoption of the report and accounts the chairman said:—The reports and accounts for the year ended 31st December, 1921, have now to be considered, and in moving that they be adopted I will follow the usual custom of briefly dealing with the accounts, then with the results of the operations, and following on with a résume of events which have taken place since the close of the year. The working profit, together with the revenue derived from the leasing of the Apex reduction plant amounted to £90,567. In addition, sales of certain plant realised £5,331. The balance brought forward at the 31st December, 1920, was £179,814, making a total of £275,712, which was appropriated as follows:—Dividend No. 26 of 5 per cent., £57,577; amount paid to bondholders in respect of sale of plant, £4,767; interest, £5,334; French fiscal tax, £1,222; leaving a balance unappropriated of £206,812. This balance carried forward is made up as follows:—Cash and gold unrealised after providing for sundry creditors, £106,713; Union of South Africa Treasury bills, £40,182; stores and materials on hand, £67,093; sundry debtors, £15,758; advances on account of supplies, £2,766; payments in advance and suspense accounts, £3,635; shares and investments in co-operative concerns, £9,997; sundries, £1,002; total, £247,146; less amounts to credit of reserve, £40,334—£206,812.

Figures Explained.

Turning to the balance sheet, capital account remains the same as for the previous year, the capital loan account shows a small reduction due to the repayment of £4,767 to the bondholders as mentioned above, and the capital loan accounts now stands at £161,456. Sundry creditors are slightly larger than last year, and reserves for renewals at £24,334 show a considerable increase over the previous year's account. Capital loan reserve remains the same as last year, namely, £15,000. The only change in property, development and equipment is the writing off of the value of plant sold, the sale price of which was paid over to the bondholders in terms of the bond. Shares in other companies show a reduction, as also do stores and materials at £67,093. The appropriation account with a balance of £206,812 requires no apology in view of the strike which commenced in January and terminated in the revolutionary upheaval in March. It was owing to the financial position that your company was able to stand the very heavy strain put on it through the recent prolonged strike. Working costs for the year were £1 6s. 5·5d., as compared with £1 8s. 5·3d., showing a reduction of 1s. 11·8d. per ton. The output for the year was 159,010 ounces of fine gold, valued at £833,803, or 104s. 10·5d. per ounce, after providing for costs of realisation. Without the gold premium the output would have been valued at approximately £667,199, which would have reflected a working loss of £76,037, after deducting the rent received from the Modderfontein East, Ltd., for the use of the Apex reduction plant.

Development Work.

Reviewing the mining operations, the total footage driven, risen and sunk was 9,752 feet, a reduction of 1,974 feet when compared with the work done in 1920, this reduction being due to the cessation of development in the Apex section, which you will recollect was discontinued after the first few months of 1920. No shafting sinking was done during the year. The footage developed on the reef amounted to 6,911 feet. Of this, 49·8 per cent. was payable, and gave an average value of 6.46 dwt. over a stoping width of 61 inches. The ore reserves, for the sake of continuity, have again been calculated on the pre-War limit of 3·76 dwt., and on this basis there is a shortfall of 298,241 tons. A slight falling off is also shown in both stoping value and width, the reserves at the 31st December, 1921, being estimated at 1,325,333 tons, having a stoping value of 5·18 dwt. over 56·65 inches. In order to show the ore reserves with varying pay limits, your consulting engineer in his report, which is attached to the published accounts, gives a table of these reserves under different economic conditions which is instructive. The development of the No. 1 eastern subsidiary incline section is now very nearly complete. No. 2 shaft section is complete, with the exception of a few winzes and raises which are being put into small areas between faults, etc. In the section embracing Nos. 4 and 5 shaft areas, which we favourably commented on last year, development has been steadily pushed westward, and encouraging values have been maintined in the shoots of ore between the two shafts where stoping is now in progress The tonnge milled was 581,060 tons, compared with 561,820 tons milled during 1920, showing an increase of 19,240 tons, the recovery value being 5·47 dwt. and 5·76 dwt. respectively. Last year I informed you that your company had cooperated with all other gold mining companies on the Witwatersrand in the formation of a gold refining company. The refinery is in commission, and from now on all gold produced by your company will be refined by it.

The Recent Trouble.

Since the close of the year, owing to the strike and revolutionary upheaval, there has been little opportunity of carrying on the work of your company, and you were briefly advised of the happenings in the report for the quarter ended 31st March last, recently issued to shareholders. Throughout last year the Chamber of Mines, on behalf of the Witwatersrand gold mining companies, carried on negotiations with the unions almost incessantly with the object of effecting the imperative reduction in working costs. In the early part of the year, and in conformity with an arrangement which had been previously discussed with the unions, the Chamber proposed a reduction in the cost of living allowance which had been granted to employees on the gold mines It so chanced that, concurrently with the proposal to reduce wages, the gold premium—which, of course, is continually fluctuating—rose to an appreciable extent. This gave the labour unions an opportunity for prolonged negotiations which resulted in the reduction in the cost of living allowance coming into effect only on the 1st August last. Further reductions had to be enforced in October and January owing to further falls in the cost of living. By a special arrangement the wages of mechanics were stabilised until the 1st January, 1922, hence the reductions did not affect them until that date. During the latter months of the year the gold premium again fell, and in November and December the position of many of the low-grade mines, including that of your own company, became so desperate, notwithstanding the reductions effected in the cost of living allowances, that immediate action in the direction of further economies was necessary if they were to be saved.

In November a conference with the unions was held, presided over by the Prime Minister of the Union of South Africa, when an endeavour was made to assist in arriving at a solution of the difficulty by so altering a certain section of the Mines and Works Regulations as to enable a longer day's work being obtained from the natives. This, however, was totally insufficient to meet the very grave position in which the industry found itself, and at the close of the year the Chamber of Mines put forward proposals for the abolition of the *status quo* agreement and for the general reorganisation of underground work on lines which, in the opinion of the Chamber, would produce substantial economise. The *status quo* agreement was an agrement entered into during the War period between the Chamber of Mines and the unions, under which it was guaranteed that during the existence of the agreement were employed on certain work on the borderline between skilled and unskilled should not be replaced by employees of another colour. Thus, if on a certain mine such work was being done by white men, white men should continue to do that work, whereas if on other mines natives or coloured men were employed, then natives or coloured men should continue to be so employed. The Chamber of Mines in putting forward its proposal gave the unions the three months' notice required by law, and at the same time notified its readiness to discuss the proposal which it placed before the unions. The unions, on the other hand, spoke of the Chamber's proposals as an ultimatum, and, notwithstanding that they had arranged for a meeting with the Chamber of Mines to discusss the whole question, a strike of all gold mining employees was called by the unions the day before this meeting was to have taken place.

Effect on the Mine.

The progress of the strike in the ensuing weeks, which culminated in a revolutionary outbreak, suppressed only at the cost of great bloodshed and loss of life, will be familiar to you from the daily papers of the period; I will not, therefore, go into details. Your mine, and the financial stability of the company, like all others, has been seriously affected by the strike of its employees, and the following outline of events directly connected with our operations will, no doubt, be of interest to you. The mill was shut down on the 10th January, and milling operations were not resumed until the 24th March. During the few remaining days of the latter month 4,600 tons of ore were milled. The Kleinfontein Power Station was closed down on 14th January, and electric power was not again available until 10th February. The pumping of the mine is effected by power supplied by the power station, and the cessation of production of power for this period very soon jeopardised the position of the pumps and motors at the bottom of the mine. The motors of the lowest pumps were dismantled and drawn up the shaft by officials to positions in which they were considered to be safe from inundation by the water which rose in the No. 2 shaft to a point about 50 feet above No. 20 pumping station, where it overflowed into the subsidiary shaft, and in No. 4 shaft to a point above the 14th level station. Here it also overflowed through No. 2 shaft workings to those of the No. 1 subsidiary shaft, which were flooded to the 25th level. After the 10th February, through the enterprise of the officials under police protection, electric power was again available, the pumps in the upper part of the mine were started, and these, together with air pumps which were installed in No. 2 shaft, were of assistance in preventing more serious flooding of the mine, the water being maintained at the then level. As soon as the strike was declared off and engine-drivers again offered themselves for work, baling was commenced, and early in April No. 20 pumping station was reached, the motors replaced, and No. 2 shaft was cleared. It was then possible to attack the water in the lower workings of the subsidiary shaft. This water is now being dealt with, and in two or three weeks the whole of the workings will be clear.

Native Position.

Our average native labour strength during the past year was 4,753, and at the commencement of the strike the strength was 4,944. The feeding alone of so mny men is a very costly business, in addition to which the terms under which they were engaged provided for a minimum daily payment irrespective of whether or not work was found for them. Under such circumstances it was imperative, in order to lighten the immediate burden of the company, that something should be done to reduce the cost of maintaining this large force of natives, and it was decided to notify all those whose contracts had been completed and those who were on short notice, that the company could not continue paying them, although if they liked to remain in the compound it would continue to feed and house them until it was possible to give them employment once more. This, together with the industrial disturbance, resulted in a very large number of natives deciding to go to their homes.

All recruiting by the organisations which supply us with native labour had naturally been suspended at the commencement of the strike, and so by the end of January the strength had decreased to 2,976 natives, and until April 4th time expired natives continued to leave in small numbers. On that date we reached our lowest point with 2,722 natives in the compound, but since then natives have come in freely, and at the end of April our strength was 3,989. The replacement of native labour to date had cost this company approximately £6,000. In restarting the mine attention was first given to dewatering, and whilst this was being done the stopes and drives above the water were being put in order. It was thus possible to start hoisting rock for the mill as soon as water conditions permitted. During the month of April 27,400 tons were milled and a substantial improvement in the tonnage will be reflected for May.

Development work has been re-commenced in the No. 4 Shaft section, and good progress is now being made at this point.

This, gentlemen, is a brief resume of the happenings on your property since the beginning of this year, and I cannot pass the matter over without recording the Board's great appreciation of the work done, during the very trying times that we have passed through, by the manager and members of the staff, who stood loyally by the company during the crisis. It is due to their efforts that the mine is in its present comparatively sound condition, and in order to show our appreciation the Board, on behalf of the shareholders, gave each member of the staff a small honorarium, not as payment for services, but as a small recognition of their loyalty and devotion to duty. I feel sure that you will heartily approve of the action of the Directors in this matter.

Future of the Mine.

Now as regards the future, your mine is getting old, and its best areas are nearly, if not quite, fully developed, and in many parts completely worked out. The grade is therfore falling, and an examination of the figures of the Profit and Loss Account, which I have analysed, will show you that, under conditions existing at the close of the year, without a substantial premium on the sale of our gold, it is impossible to work at a profit.

When a gold mining company cannot work at a profit, and can see no hope of so re-arranging its affairs that profitable working can be hoped for, there is only one thing left to be done, and that is to cease operations and make the best distribution it can of its remaining assets.

The strike and subsequent revolution had resulted in the depletion of your cash resources at 31st March by a sum of no less than £56,252. To this must be added sundry further charges connected with the trouble which are still coming in, together with the cost of de-watering and pumping the lower levels of the mine, and the losses which we are now incurring owing to the shortage of the native labour force. I think, therefore, that we shall not in any way be over-estimating the cost if we put it down to a loss of at least £70,000. Roughly speaking, this represents the cost of our endeavour to keep the mine in working order. You will have noticed that for the month of April a loss of £5,758 was incurred, arising out of the smallness of the tonnage which it was possible to treat owing to the shortage of native labour, and to the flooding of the lower, and probably the better portion of the mine. It is not anticipated that we shall make a profit for the month of May, as the tonnage will still be short, and the grade on the low side.

Now it is clearly impossible that such a state of affairs can continue, and unless within the next few months we can so adjust our expenses as to show a profit, the Board will have to reconsider the position of the company. Our only hope is to substantially reduce costs of production which must approximate pre-war costs, and this can be accomplished only by a sustained effort and steady, willing and careful work by all concerned in order to provide the maximum of pay tonnage per month. The alternative, as I have stated, is the closing down of the mine, and I would earnestly recommend this aspect of the case to the serious consideration of the employees, and invite their loyal co-operation in an effort to reduce costs to a figure which will enable us to continue working profitably and earn some dividend for the shareholder who has invested his money in the mine, and whose interest in the company is continuously being overlooked by some in times such as we have recently passed through.

Reduced Costs or Closing Down.

The following summary will perhaps serve to emphasise the urgency of the case, which alone is my justification for dwelling so much on this question of reduction of costs.

With gold at an average nett price of £5 4s. 10d. per fine ounce throughout last year, the production amounted to £833,803. Costs were £768,778.

The figure of costs is analysed in the following statement, which also shows the cost per fine ounce:—White wages, cost £244,261, per fine ounce 30/8.7d.; native wages, cost £161,693; per fine ounce 20/4.1d.; stores, cost £261,957, per fine ounce, 32/11.4d.; other expenditure, cost £100,867, per fine ounce 12/8.2d. Made up of: Miners' phthisis compensation, £15,772; native labour importation and passes, £15,827; municipal rates and sanitary services, £6,543; life and fire insurance premiums, £6,843; power from Kleinfontein Power Association, £15,850; sundries, £17,230; claim licences, £6,212; contribution to Miners' Phthisis Sanatorium, Training School, etc., and donations, £3,259; Head, London and Paris Office expenses, including directors, secretarial, consulting engineer, and auditors' fees, printing, stationery, cables, etc., £13,331; total, £100,867. Total cost, £768,778, per fine ounce 96/8.4d.

Had there been no gold premium, the nett value of the gold produced would have been £667,199, and had the gold value, including the premium throughout the year, been at its present figure, namely, 93/3d., the value of our production would have been £731,283. It will thus be seen that the dividing line between costs and revenue requires serious and immediate adjustment.

I have to report the retirement, owing to ill-health, since the close of the year, of Mr. Edward Wagg, a member of your London Committee. Mr. Wagg has been on the London Committee for many years, and his ripe experience and ready assistance have always been highly prized by his fellow committeemen, and by the Board in Johannesburg. It is a matter of great regret to all of us that he has now found it necessary to retire, and I am sure you will wish me to take this opportunity of expressing to him, on behalf of the company, our appreciation of his valued services, and our hope that a relaxation of the strenuous business life which he has always led, may benefit his health. Mr. G. R. Airth, the Managing Director in London of the Anglo-French Exploration Company, Limited, has been appointed to fill the vacancy in the committee caused by the resignation of Mr. Wagg, and we can look with confidence to Mr. Airth ably filling the position.

New Kleinfontein G.M. Co.

I now move that the reports and accounts for the year ended 31st December, 1921, be adopted, and that the action of the directors in declaring interim dividend No. 26 of 5 per cent. be confirmed.

The motion was seconded by Mr. Carpenter, and, on being put to the meeting, was carried unanimously.

As no other nominations for the directorate had been received, the chairman declared Messrs. G. C. Fitzpatrick, O.B.E., and William Ross duly re-elected.

The chairman stated that in connection with the re-election of these gentlemen, he wished to express appreciation of their good work on behalf of the company. His friend, Mr. William Ross, had been a member of the Board since 1895, and he could assure him that it was a real pleasure to his colleagues to see him looking fit and well. He was expressing the hope of all those present in stating that they looked forward to Mr. Ross doing good helpful work on behalf of the company for many years to come. Mr. Ross thanked the chairman cordially for his kind appreciation and good wishes.

On the motion of Mr. Suter, Mr. Webber seconding, the retiring auditors, Messrs. F. W. Diamond & English and C. L. Andersson & Co., were re-appointed auditors for the ensuing year, and their remuneration for the past audit fixed at 200 guineas each.

A Plea for Co-operation.

The chairman said that before the meeting terminated he wished to emphasise the point that if the company was to carry on operations with benefit to the shareholders who had every right to look for some tangible return on their investment, and in the interests of the employees, then there must in future be a willing and cheerful co-operation between all classes of the company's employees. He wished also to emphasise the fact that the company had been spending a matter of about £800,000 per annum in the community for many years, and even if very little return was accruing to shareholders, it had to be borne in mind that the spending or circulating of such a sum as he mentioned was a most important matter for South Africa. Of course, there were other companies similarly placed, and he submitted that in the best interests of this country it was imperative that such properties should be kept going to their utmost limit, as the gold mines were, after all, the real producers in South Africa. He sincerely hoped that no effort would be lacking on the part of Mr. Harding, his staff, and the employees in general to secure that wholesome co-operation, without which there could be no real success. The majority of the employees worked earnestly and with goodwill, but there were always a number of stormy petrels who kept making trouble. He wished to say that if a man considered he had any grievance or thought he was not getting a square deal, the manager's door was always open to such a man. In order to keep a mine of this grade running there must be consistently a maximum tonnage with stringent economy and efficiency. If these strikes and interruptions were to recur there could only be one course to be followed by the New Kleinfontein and other similar low grade mines, namely, to close down, as it was quite impossible for this company to struggle against any recurrence of losses such as had been the case in the recent upheaval. The proceedings then terminated.

To Lower your Operating Costs:

A Lubrication Audit

Business to-day protects itself against waste and inefficient methods——by audit.

An audit gives an exact picture of present conditions, and points the way to improvement.

We would like to call to your attention the possibilities of a Lubrication Audit in your plant.

See details in column.

Only a Lubrication Audit can give you full information, and open the way to new economies which will soon be reflected in lower operating costs.

Present industrial conditions make it urgent that you take this step toward improved results at once. Ask our nearest branch today about the Lubrication Audit.

GARGOYLE

Lubricants

A grade for each type of service

THE LUBRICATION AUDIT

Explained Step by Step (in condensed outline)

INSPECTION:—A thoroughly experienced Vacum Oil Company of S.A. Limited, representative in co-operation with your plant engineer or superintendent makes a careful survey and record of your mechanical equipment and operating conditions.

RECOMMENDATIONS: We later specify in a written report, the correct oil and the correct application of the oil for the efficient and economical operation of each engine and machine. This report is based on:

(1). The inspection of the machines in your plant.
(2). Your operating conditions.
(3). Our 25 years of lubricating experience with all types of mechanical equipment under all kinds of operating conditions.
(4). The outstanding experience of the Vacuum Oil Company in manufacturing oils for every lubricating need.

CHECKING:—If, following our recommendations in this audit, you instal our oils, periodical calls will be made to check up the continuance of the desired results.
For the above Free Service address our nearest branch office.

BRANCH OFFICES:

Cape Town **Johannesburg** **Pretoria**
Kimberley **Bloemfontein** **Mossel Bay**
Port Elizabeth **East London** **Durban**
Lourenco Marques.

VACUUM OIL COMPANY OF SOUTH AFRICA, LTD.

STANDARD BANK

OF SOUTH AFRICA, LIMITED.

(With which is incorporated the African Banking Corporation, Ltd.)

Established 1862.

Authorised Capital	**£10,000,000**
Subscribed Capital	**£8,916,660**
Paid-up Capital	**£2,229,165**
Reserve Fund	**£2,893,335**

GENERAL BANKING BUSINESS transacted at all Branches and Agencies; DEPOSIT and CURRENT ACCOUNTS opened; PURCHASE and SALE of INVESTMENT SECURITIES effected, etc.

SAVINGS BANK ACCOUNTS opened on terms, particulars of which may be obtained on application.

The BANK is in close touch with TRADE and INDUSTRIAL CONDITIONS, both local and overseas, and special attention is given to COMMERCIAL ENQUIRIES from customers.

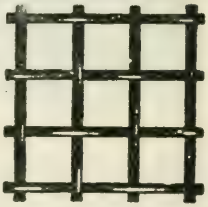
EXECUTOR and TRUSTEE business undertaken.

Over 380 Branches and Agencies in Africa.

Agents and Correspondents throughout the World.

SCREENING

Order No	Gauge	Space. Inch.
S2031	20	
S2032	18	
S2033	16	
S2034	15	3/8
S2035	14	
S2036	12	
S2037	10	



2½ Mesh, No. 16, Steel.

Ask us for quotations for all kinds and sizes of Screening; made in our own factories, and promptly delivered.

The S. A. Wire Co., Ltd.

P.O. Box 651, Durban.

SUCCESSFUL

FINANCIAL PUBLICITY!

CONSULT

THE TECHNICAL PUBLICITY AGENCY.

Advertising Advisers, Contractors and Consultants. Specialised, Concentrated, Wasteless, Advertising Service.

Complete Advertising Campaigns Planned and Handled. "Copy" Prepared. Best Media Chosen. Lowest Prices and Best Positions Secured.

Company Flotations a Speciality.

Phone 913. **Box 3723.**

177, STOCK EXCHANGE, JOHANNESBURG.

The Week in the Sharemarket.

IMPROVING OUTLOOK—ENEMY SHARES ABSORB BIG AMOUNTS—GOLD PREMIUM AND COSTS.

In spite of immediate fluctuation, there is no doubt in our view of the future that the market is going better. A certain amount of selling was to be expected prior to the 14th to supply money for ex-enemy shares, and since that date we must not overlook selling for "window dressing" purposes for June 30, and unless encouragement comes from London easier prices may be expected in the meantime. But to counteract this view is the fact that something like £1,500,000 to £2,000,000 has had to be found by the 14th of this month, and in spite of this prices have improved; in fact, in the case of Government Areas and Modders, were rather over-rushed, and the recent fall of a few shillings cannot be taken seriously. The slight rise in gold to 92s. 6d. per ounce is to the immediate good, but one cannot help thinking that a reduction of premium, with a similar reduction in costs, would be more to the benefit of the industry. We trust that the lords of the gold creation will not be led away by any fictitious rise in gold that will undoubtedly create demands from Labour sources—demands which, under exceptional circumstances, may be satisfied for the moment, but cannot possibly be permanently, from any economical point of view.

Every argument has been brought to bear in support of the substantial declaration of dividends. Those already published are very satisfactory, and we have no reason to believe than that those not yet forthcoming will be eminently satisfactory, where such satisfaction can be given; but it must not be forgotten that the mine which figures as a non-dividend payer for this half-year must not be damned, as circumstances during the next six months may produce very favourable reading in the December annual reports, and no shares to-day should be turned down without careful investigation as to the possibilities of the near future.

From a speculative point of view, we would mention that Modder B's, Nourse Mines, and S.A. Alkalis are open to, probably profitable, close investigation.

	Fri. 9th.	Sat. 10th.	Mon. 12th.	Tues. 13th.	Wed. 14th.	Thurs. 15th.
Anglo-Amer. Corp. . .	21 0*	20 9	21 3	20 10½	20 9*	20 10*
Apex Mines	7 0*	7 0*	7 0*	7 0	6 9*	—
Auroro Wests	4 0*	4 0*	4 0*	4 0*	4 0*	4 0*
Brakpan Mines . . .	47 6*		48 0		48 6†	
Bushveld Tins . . .	0 4*	0 4*	0 4*	0 0	4* 3*	0 4*
Cinderella Cons. . .	2 4*	2 4*	2 4*	—	2 4*	2 4*
City and Subs. . . .	—	2 3*	2 0*	2 0*	—	—
City Deeps	43 6*	43 0	42 6*		42 0*	—
Con. Diamonds . . .	15 9	15 3*	16 0	16 0	16 0	16 0*
Con. Langlaagte . .	—	—	—	13 6*		
Con. Main Reefs . .	10 6*	10 6*	10 6*	10 0	10 0	10 0*
Con. Mines Select. .	13 3*	13 0		13 0*	13 0*	13 0*
Coronation Freeholds	1 0†	—	0 10*	0 10*	0 10*	0 10*
Do. Syndicates . .				4 3*	4 3*	4 0*
Crown Diamonds . .	6 0	5 11*	6 0*	6 1	5 11*	6 5*
Crown Mines	—	38 0†	36 0*	40 0†	36 6*	36 0*
Daggafontein Mines.	-	2 9*		2 9*	2 9*	
E.R. Coals	1 6*	1 6*	1 6*	1 6*	1 6*	1 6*
E.R. Deeps	0 9*			0 9*	0 9*	0 9*
E.R. Minings. . . .				10 6*	-	
E.R. Props.	6 0*	—	6 3*	6 4*	6 4*	6 3*
E.R. Debentures . .	—	—				£57 *
Eastern Golds . . .	0 7†			0 6*		0 6*
Ferreira Deeps . . .	—	—	—	7 3		
Frank Smith Dmds..	3 11	3 11	4 0	3 9*	3 10*	3 10*
Geduld Props. . . .	58 0	58 6*	59 0	59 0	58 3*	58 3*
Glynn's Lydenburgs	15 6*	16 6†	16 0	16 0†		
Govt. Areas	89 0	89 6	92 3	94 0	96 0*	94 6
Hume Pipes	15 0†	15 0*	16 0†	15 0		
Knight Centrals . .	3 11*	3 11*	3 11*	3 10	3 10*	3 10*
Lace Props. . .	7 9*		7 9*	7 9*		
Leeuwpoort Tins . .	8 0†		6 0†	6 0†	5 0*	5 4*
Luipaardsvlei Est. .						2 6*
Lydenburg Farms .	5 3*	5 3*	5 6*	5 5*	5 7*	5 9*
Meyer & Charltons.		75 0†	75 0†	71 3*	72 6*	
Middelvlei Est. .	1 9†	1 3*	1 4*	1 3*		
Modder Wests . . .			1 0†	1 3†		
Modder B.'s	30 9	30 9	31 0	30 9*	21 0*	31 0
Modder Deeps .. .	43 6	43 6*	43 9	44 3	44 6	44 0*
Modder Easts . . .	7 6*	7 9*	7 10½	7 10*	7 9	7 9*

	Fri. 9th.	Sat. 10th.	Mon. 12th.	Tues. 13th.	Wed. 14th.	Thurs 15th.
Natal Navig Colls	31 6*	32 0	32 0*	32 0	31 6*	30 0*
National Banks . .	215 0*		215 0*		217 6	
New Eland Dmds. .	29 6	28 0*	30 0	29 6*	32 6*	32 6
New Era Cons. . . .—	6 0*	6 6†	6 3	6 0*	6 0*	6 0*
New Geduld Deeps .	1 6*	1 6*	1 7	1 6*	1 6*	1 6*
New Kleinfonteins .	6 0*	6 0*	6 3*	6 3	6 6†	6 0*
New Modders	72 10½	72 0	72 9	73 6	74 3	73 3*
New Primrose . .						5 3*
New Unifieds . .				4 9*	4 9†	
New State Mines . .	31 0	30 9	31 0	31 0*	31 6*	32 0
Nigels	5 0*		5 0*	5 0*	5 0*	6 0†
Nourse Mines . . .	14 9*	14 6*	15 1	15 3*	15 3	15 3
Pretoria Cements . .	44 6*	44 0*	44 9	44 9†	44 3*	45 0*
Rand Collieries			0 9*		0 9*	
Rand Nucleus			1 1*	1 1*	—	1 1*
Randfontein Centrals .	—	—	10 3*		10 0*	10 0*
Do. Estates	16 9	16 7*	17 0*	16 9*	16 10½	16 9*
Rouxville Dmds. . .	1 2*	1 2*	1 2*	1 2*	1 3*	1 3*
Roberts Victors . .	8 0	7 9*	7 10	8 0*	8 0*	8 0*
Rooibergs	3 0*	3 0*	3 0*	3 0*	3 0*	3 0*
Ryan Nigels . . .			1 0†	4 0†	3 0*	3 0*
Simmer and Jacks .	3 0	3 0*		3 1*	3 0*	3 0*
S.A. Lands	4 3*	4 3*	4 3*	4 3*	4 3*	4 3*
Springs Mines . . .	43 6	43 3	43 6	44 0	43 6*	43 3*
Sub-Nigels	11 9	12 0	11 6*	11 6*	11 6*	11 0*
Swaziland Tins . .	7 0†	5 0†		4 0*	5 0!	5 0*
S.A. Alkali	13 3	—		15 0	15 0*	15 6*
S.A. Townships .	9 3*	9 3	9 6	9 3*	9 3*	9 3*
Trans. G.M. Est. .	—	12 3†	11 6*	11 0*	16 6*	11 0*
Transvaal Silvers . .		14 0*	16 0*	14 3	13 9*	13 9*
Tudors		0 8†		0 8†	0 8†	—
Van Dyks			—	-	-	1 0†
Van Ryn Deeps . . .	67 3*	68 0	68 0*	70 0†	68 6*	69 0*
Village Deeps . . .	—	10 6*	10 9*	10 6	10 0*	10 0*
West Springs	9 6*	9 6*	10 3	10 3	10 1½	10 3
West Rand Cons. .	5 0†	5 0†	4 0*	4 3*	4 6*	4 6
Western Rand Est.	3 10*		3 10*		3 10*	3 10*
Witbank Colls. . . .	39 0*	39 0*	—	39 0*	39 6*	39 0*
Witwatersrands . .		13 0*				
Wit. Deeps	—	9 6*	9 6*	9 3	9 0*	
Zaaiplaats Tins . .	2 3*	2 1½	2 0*	2 0*	2 0*	2 0*
Union 5 per cent . .	£100	£100¼*	£101¼*	£101*	£101½	£101

* Buyers. † Sellers. a. Odd lots. b. Ex London.

IN LIQUIDATION.

Rietfontein and Sabie Gold Mining Company, Ltd.; West Rand Mineral Water Works, Ltd.; Anglo-German Tins, Ltd.; F.N.H. Investment and Trust Syndicate, Ltd.; Propp-All (South Africa), Ltd.; Transvaal Mooi River Estates, Ltd.; Transvaal Pers, Beperkt; African Merchants, Ltd.; African Mining Concessions, Ltd.; Durban Roodepoort Mynpacht, Ltd.; Griquatown Mining Syndicate, Ltd.; British and Canadian Hydraulic Tube Company, Ltd.; Mark Wilson, Ltd.; Jacobs, Sons & Company, Ltd.; Chicory, Ltd.; Bhula, Ltd.; N. Kallenbach, Ltd.

FOR SALE.

STUDENT'S COLLECTION OF MINERAL AND ROCKS, consisting of some 500 named specimens arranged in six-drawer cabinet. No reasonabe offer refused.

Also,

LIBRARY OF TECHNICAL TEXT-BOOKS, consisting of Modern Works on Mining Metallurgy, Chemistry and Engineering. The whole to be disposed of regardless of cost either in one lot or single volumes. List on application.

Reply c/o H.O.M. 59, C.N.A.

The May Output in Detail.

IMPROVEMENT MAINTAINED—LABOUR SUPPLY GROWING STEADILY—SOME NOTABLE INCREASES IN PROFITS.

The gold output declared by the Transvaal Chamber of Mines for May shows an increase of 118,448 fine ounces over the return for April. With the exception of a trifling decrease reported by the Simmer and Jack, all the other producing companies show increases, the New Modder leading with 14,876, followed by Government Gold Mining Areas 13,657, Brakpan 11,124, Van Ryn Deep 9,241, and City Deep 7,946 ounces.

The influx of native labour, making a total of over 17,000 beyond that of April, with its proportionate employment of white workers, has resulted in a return of 629,786 fine ounces of gold, which is within 70,000 to 80,000 ounces of the returns for a normal month.

The value, £2,897,016, is nearly half a million more than the April value. The selling price for both months has been taken at the same figure, viz., 92s. per fine ounce.

Total output	629,786 oz.
Increase over April	118,448 oz.
May value	£2,897,016
April value	£2,352,155
Witwatersrand	612,703 oz.
Increase	119,301 oz.
Outside districts	17,083 oz.
Decrease	853 oz.

Individual Returns.

		Inc.	Dec.
Aurora West	2,695	560	—
City Deep	34,979	7,946	—
Durban Deep	8,675	492	—
E.R.P.M.	26,012	3,015	—
Geduld	16,333	552	—
Geldenhuis	12,259	2,099	—
Knight Central	5,286	513	—
Meyer and Charlton	6,928	33	—
Modder Deep	23,592	3,031	—
Modder East	8,823	687	—
New Kleinfontein	10,313	3,467	—
New Modder	43,677	14,876	—
Randfontein Central	31,144	5,346	—
Roodepoort U.M.R.	2,003	85	—
Rose Deep	10,744	862	—
Van Ryn Estate	7,678	1,455	—
Village Deep	16,548	1,752	—
West Rand Con.	9,102	101	—
Wit. Deep	9,803	1,463	—
Brakpan	25,325	11;124	—
Con. Langlaagte	9,685	1,943	—
Con. Main Reef	15,855	2,816	—
Crown Mines	49,660	5,672	—
Government G. M. Areas	60,940	13,657	—
Langlaagte Estate	13,007	1,019	—
Modder B.	27,549	6,849	—
Luipaardsvlei	2,492	2,492	—
New Goch	3,763	373	—
New Primrose	3,862	579	—
New Unified	2,219	393	—
Robinson	4,593	146	—
Robinson Deep	16,154	2,930	—
Simmer and Jack	3,300	—	248
Springs Mines	18,191	4,556	—
Van Ryn Deep	25,526	9,241	—
Witwatersrand	9,850	3,427	—
Ferreira Deep	5,359	895	—
Nourse Mines	13,489	2,068	—
Wolhuter	6,991	678	—
Miscellaneous	3,299	356	—

Outside Districts.

Sub Nigel	5,714	117	—
Glynn's Lydenburg	1,464	—	111
Transvaal G.M. Estate	5,414	—	208
Miscellaneous	4,491	—	651

Native Labour Returns.

The supply of native labour as given by the Witwatersrand Native Labour Association and other contractors is shown below:—

	May.	April.
On gold mines	155,425	138,277
On coal mines	11,525	11,385
On diamond mines	1,219	1,232
Total	168,169	150,894

Letters to the Editor.

LABOUR AND THE LEAGUE OF NATIONS.

To the Editor, *S.A. Mining and Engineering Journal.*

Dear Sir,—The International Labour Office wishes to get into touch with representative newspapers in all countries with a view to supplying them with information on the work of the International Labour Organisation.

As you are aware, the International Labour Organisation was established by the Treaty of Peace, as part of the organisation of the League of Nations, for the progressive betterment of labour and social conditions throughout the world.

The Organisation consists of:—

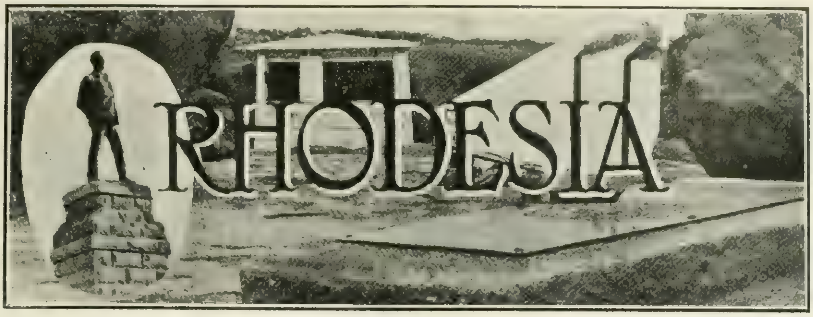
1. A General Conference of representatives of members (2 Government delegates, 1 employers' delegate and 1 workers' delegate for each member).

   The Conference meets once a year and decides on the adoption of draft conventions and recommendations which the members engage to submit to the competent authorities for the enactment of legislation or other action.

2. An International Labour Office, whose functions include "the collection and distribution of information on all subjects relating to the international adjustment of conditions of industrial life and labour."

As a member of the League of Nations, South Africa is also a member of the International Labour Organisation, and in view of the great importance of labour and industrial problems in South Africa, I am confident that the South African public would be interested to be regularly informed of the work being carried on by the International Labour Organisation. I am, therefore, instructing that section of the Information Service of the office which is charged with relations with English-speaking countries to place your name on its mailing list to receive copies of its communiques. I would welcome any criticism of the manner in which the communique is drawn up and in particular any indications of the subjects on which you would specially like to receive information.—Yours faithfully,

G. E. DI PALMA CASTIGLIONE,
Chief of Intelligence and Liaison Division,
League of Nations.



The Mineral Industry of Southern Rhodesia.

SEVERAL MINES LOOKING WELL IN DEPTH—THE LONELY'S GAS ENGINES—CAM AND MOTOR'S SENSATIONAL VALUES—THE ROTHAMSTEAD; A NEW DISCOVERY—CHROME IRON INDUSTRY RESTARTED.

The mineral industry of Rhodesia is more or less maintaining its prestige under difficult circumstances. The decline in the gold premium, coupled with the serious fall in the price of metals, has had a depressing influence, and to these factors must be added the general world-wide depression which has hit farmers in Charterland particularly hard, and also the uncertainty as to the political future of Southern Rhodesia.

* * *

All the same, the mineral output at present has a value at the rate of about four millions sterling per annum, of which the gold mines are contributing about three millions. No new and large gold mines are coming to the fore, and one or two of the bigger producers, such as the Planet-Arcturus, for example, are scarcely likely to last very much longer. On the other hand, the Lonely is looking very well at a depth of 3,000 feet from the surface, and is reaping an advantage of more than 10 per cent. on the issued capital of the company by the employment of the new gas engine plant. The Cam and Motor has been disclosing some sensational values on the 11th level, and the Shamva is looking better than ever.

* * *

The failure of the Zebra block in the Gatooma-Hartley field to show consistent low grade values over any appreciable distance was a big disappointment, but it is encouraging to learn that initial prospecting results at one or two points in the Renny-Tailyour concessions are quite good.

In the Selukwe block of the R.T.C. active prospecting lately has been attended with somewhat promising results, and it is hoped that as prospecting is further developed one or two properties may show up very well. One proposition in particular is showing very similar indications to those prevailing in the Phœnix Mine. This is the Rothamstead. This is an entirely new discovery. The reef is quartz in schist. In the Gatooma area some of the properties are looking well and also in the Bembesi district. The Abercorn Mine (Gwanda), owned by Davis Bros., is opening up satisfactorily.

The Falcon has done no development for twelve months owing to lack of funds, and but for the assistance afforded by the Goldfields, it would have been impossible for the company to weather the period of a low price for copper. Recently there has been some improvement in price. Development has been restarted to some extent in a modified form. An auxiliary shaft is being put down from the 12th level to what, it is hoped, may become No. 14, but opening up of the level at this point will depend on results obtained when the horizon has been reached. As to the Shamva, it is looking better than ever, and an important feature is the likelihood of good results being secured at the seventh level.

The chrome iron ore industry at Selukwe is restarting on a modified scale, and the asbestos mines at Shabanie and Mashaba, which are looking exceedingly well, are again marketing a considerable amount of low grade fibre.

FALCON: DEVELOPMENT RESUMED.

It is satisfactory to learn that owing to the slightly improved price of copper Falcon Mines have re-started development, although at present only in a very modified fashion, but we are glad to be able to state that the sinking of an auxiliary shaft from the 12th to the 14th level was commenced on June 1. Further developments, we understand, will depend entirely on the results obtained at the latter horizon.

* * *

RICH STRIKE AT GWANDA.

The Gwanda correspondent of the *Bulawayo Chronicle* writes: Messrs. McKean and Davis, of the M.D. Syndicate, are to be congratulated on having " struck it at last!" The scene of their good fortune is on the old " Morten Pinkney " ground, about 600 yards from the Champion Mine. The reef, a true " fissure " vein is from 18 to 24 inches in width, and carries good values, varying from 18 to 60 dwts. Mr. Davis is busy cleaning out the old shaft on the " Morten Pinkney," and states that the results are, so far, very promising. As is only to be expected, on such good news being reported, some of the local residents have visited the locality and pegging of what is hoped will be the extension is taking place. Messrs. McKean and Davis say " the more the merrier." They have all the ground they require, and welcome the pegging of other claims near them.

* * *

REZENDE MINES.

Accounts for 1921 show: Revenue, from bullion recovered during year, £132,955; gold premiums declared, £28,000; withdrawn from reserve—Gold reserve (created 1920), £5,000, and premiums, £25,000; from other sources, £4,513—total, £195,468. Expenditure (including working costs, £93,842), £129,333; balance to appropriation account, £66,135. In addition to foregoing, bullion to value of £10,878 was realised during year, the gross proceeds being placed to reserve, which at end of financial year amounted to £18,576. The heavy withdrawal of £30,000 from reserve is in the nature of a special item, and was in connection with increase of capital contemplated at December 31, 1921. Appropriation account shows £34,519 brought in, plus £66,135 for 1921; total, £100,654. Dividends Nos. 15 and 16, each of 20 per cent., and directors' additional remuneration thereon, absorbed £50,400, leaving £50,254 to be carried forward. A final dividend for year is not recommended, and total paid for year under review is therefore 40 per cent. The consulting engineers' report states ore reserves at end of 1921 are completed at 140,512 mine tons, valued at 9.5 dwt. per ton, and compare with 140,268 tons, valued at 10 dwt. per ton, for 1920. Development, therefore, has fully maintained the tonnage, but the value is slightly lower.

Kinghorn

Metallic Valves

SOLE AGENTS:

GEO. CRADOCK

—AND CO. (S.A.), LTD.—

75-77, CULLINAN BUILDINGS.

P.O. Box 316. Telephone 539.

T Add.: "ROPES."

JOHANNESBURG.

We beg to announce our
association with the
Ingersoll-Rand Company
in the operation of a

NATAL BRANCH OFFICE

SITUATED AT

338a, SMITH STREET,

DURBAN

ROBINS CONVEYORS (S.A.), Ltd.

(Head Office: Robins Conveying Belt Co., New York, U.S.A.)

**Conveying & Hoisting Machinery,
Material - Handling Appliances
:: :: and Installations. :: ::**

P.O. BOX 4736—TELEPHONE 4182
JOHANNESBURG.
P.O. BOX 811—TELEPHONE 3383
DURBAN.

USE

"PORPOISE"

BRAND

ANTIFRICTION GREASE

Used for years by the majority of Mines all over South Africa.

Manufactured by

South African Lubricants & Chemical Works, Ltd.,

DURBAN & JOHANNESBURG.

Phone 1618, *Johannesburg Branch Office.*

REID BROS.

— (S.A.), LIMITED. —

Sole Agents for:

CARRON COY.—HAULAGE GEARS, Etc.
ANDERSON, BOYES & COY.—ELECTRIC COAL CUTTERS.
HARDY PATENT PICK COY.—"HARDIAX" AIR COAL CUTTERS.
BLANTYRE ENGINEERING COY.—SCREENING PLANT.
WM. ARNOTT & CO.—CORNISH AND LANCASHIRE BOILERS.
QUASI-ARC ELECTRIC WELDING APPARATUS.
SMALL & PARKES—BELTING, PACKING, Etc.
FINNEY PATENT HAND PUMPS.
WELDLESS STEEL CHAINS.
CHAPMAN DOUBLE BALL BEARINGS.

JOHANNESBURG.

P.O. Box 802 'Phones 6070/1

AND AT DURBAN.

The South African Mining and Engineering Journal.

HEAD OFFICE: 176-180 Stock Exchange Buildings (2nd Floor), Fox Street, JOHANNESBURG, Union of South Africa.
Telephone **913.** P.O. Boxes **963** and **4573.**
Cables and Telegraphic Address: "MINING JOURNAL."

ANNUAL SUBSCRIPTION RATES: Oversea, £2; Union of South Africa and Rhodesia, £1 10s.; Local Delivery (Town only), £1 6s., payable in advance.

AGENTS FOR GREAT BRITAIN AND AMERICA: Argus South African Newspapers, Ltd., Byron House, 82-85, Fleet Street, London, E.C. 4.

Copies of this Journal are obtainable at all Branches and Agencies of the Central News Agency, Ltd., at all News Agents and Railway Bookstalls throughout South Africa, and at the London Agency as above.

CONTENTS. PAGE

The Truth about Rand Osmiridium ... 1387
The Latest Diamond Rush ... 1389
Future of S.A. Iron Industry 1391
Native Mine Labour 1392
Outside Districts 1393
The Case for the Transvaal Coal Owners 1395
New Railways 1396
Position and Prospects of the New Kleinfontein ... 1397
Share Market 1401
The May Output in Detail ... 1402
Letters to the Editor ... 1402
Rhodesian Section:
The Mineral Industry of Southern Rhodesia ... 1403
Topics of the Week 1405
The May Output: Group Returns ... 1409
Engineering Section:
New Mozambique Cement Factory 1411
Road Transport in South Africa 1412
Trade and Industries Section:
The Week in the Mining Material and Engineering Trades 1414
"C.M.S." Subsidiaries 1416
Company Meetings:
Barnato Group—New Primrose, New Unified Main Reef, Langlaagte Estates, Consolidated Langlaagte, Witwatersrand G.M. Co., New State Areas, Van Ryn Deep, Government Areas. General Mining Group—Aurora West, Cinderella Consolidated. Meyer and Charlton, New Goch, Roodepoort United, West Rand Consolidated. New Steyn Estate, [illegible] Estates, Rand Collieries 1417

TOPICS OF THE WEEK.

Taxation Run Mad!

Transvaalers have long since ceased to be surprised at the vagaries of the Provincial Executive, but in their latest taxation proposal that egregious body surpass themselves in stupidity. The employers' tax—which is, of course, designed to hit chiefly the unfortunate mines—is directly calculated to accentuate unemployment and to drive every industry that can be moved, to the coast. The tax is not likely to be allowed to go through without a struggle, and it will not be difficult to prepare a very convincing case against it. Of its fellow-proposal, the 10 per cent. advertisement tax, it is difficult to write in temperate language. A more hasty and ill-considered scheme of raising revenue it would be difficult to conceive. For most of the periodicals in this province it simply means extinction, and for all of them sectional taxation of the most burdensome description. It is impossible to pass on the tax to the advertisers, and in many cases the 10 per cent. tax on gross revenue from advertisements is equivalent to a 100 per cent. tax on profits—a rate surely unapproached outside of Soviet Russia. As a fact, the tax is copied directly from that ill-starred country, where the Press was, on the advent of the Soviet *régime*, effectually put out of existence by just such a tax. In the early days of newspapers similar taxes were not unknown, but it was gradually recognised that they were tantamount to a tax on news and knowledge, and they were withdrawn by enlightened statesmen. That the Transvaal to-day should take so retrograde a step is unthinkable, and by the time these words appear in print it is hoped the iniquitous proposal shall have been dropped.

Diamond Revival?

The prospects of an approaching diamond revival brighten as the days go by. De Beers and other diamond shares are creeping up; diggers are selling their finds more freely; De Beers are reported to be contemplating the treatment of accumulated ground; the Central Mining report hints at an early improvement; and the chairman of all the big companies holding interests in diamond concerns speak hopefully of the future. Thus, at the Consolidated Mines Selection meeting in London in mail week Mr. Walter McDermott, the chairman, declared that "there is a distinct improvement in the actual demand for diamonds, as well as in the prospects generally for the current year." Read in conjunction with other recent statements, this is certainly encouraging. As regards the C.M.S. Company's biggest interest outside the Rand, namely, its holding of convertible debentures of the Consolidated Diamond Mines of South-West Africa, Mr. McDermott justly characterised this as "a sound investment and possessing great speculative possibilities." It is too much to hope that the diamond trade will see again within a measurable period the record prosperity of 1919-20. But with conditions in the United States on the up-grade and business in other parts of the world improving, diamonds will undoubtedly come into their own again.

The Coal Mines and the Mining Board.

The coal mining industry made out a case before the Mining Board that will be difficult to disprove, and its chief witnesses remained unshaken under cross-examination. With the evidence given yesterday by Mr. Isaac Hodges this portion of the work of the Board may be said to be complete, and there certainly has been no lack of data for the Board to go upon. Some extracts from the lengthy and detailed statements put in on behalf of the Transvaal coalowners are put on record in another part of this issue, and we hope next week to be able to give publicity to Mr. Hodges' somewhat unorthodox views. Mr. Hodges can always be trusted to put up a good fight for his opinions, and the fate of his novel experiment in dealing with complex conditions at the Cornela Colliery will be followed with much interest. Perhaps the most noteworthy individual evidence given was that of Mr. William Pott, chairman of the Tweefontein Colliery. Mr. Pott submitted a statement to the effect that the cause of the strike on the collieries was not that wages had been or were proposed to be too low to provide a good living on a healthy comfortable basis for white men with families, but because the miners and mechanics were paid such high wages that they were all so well off that a strike with the possibility of further strengthening their position as dictators of what the management could or should do was worth the chance. Even married men with families lived on a basis of the greatest ease and comfort, and single men or those with fewer responsibilities were able to save several hundreds of pounds each year. "The result was that, like the cattle of Egypt, they waxed fat and kicked; or, in other words, they suffered from the disease of swollen heads, a not uncommon trouble with people becoming more or less suddenly wealthy."

A Silent Industry.

[illegible] the Mining Industry [illegible] De Beers and other diamond [illegible] the benefit of their experience. [illegible] view of the [illegible] com-mittees, and he might learn something of interest from the diamond [illegible] of such bodies have never been invoked. De Beers can point to a singularly happy and uneventful history of its relations with employees. In all the years of its existence we believe it suffered from one strike, and that was but a small sectional trouble with its mechanics. All the participants were permanently dismissed from its service, and the relations between the company and its men have since remained unbroken. The evidence of an organisation like De Beers, which has pursued its industrial course untrammelled by labour troubles should be valuable indeed. Union men and [illegible] of loyalty [illegible] in the service. What is true of De Beers is equally true of the Jagersfontein and Premier mines, and the whole diamond mining industry provides an excellent object-lesson in good relations between [illegible] think that the Mining Industry Board will have gained a complete view of the circumstances governing the mining industry in general in this country if it fails to include De Beers and [illegible] mines in its field of inquiry.

Gold and Currency.

[illegible] importance on the currency question was made by the Minister of Finance in the House of Assembly this week. He said that in accordance with the recommendations of the conference the embargo on the export of gold coin and bullion would be removed as from the end of the current month, and members would be surprised to know there was gold and silver coin to be found in South Africa, but there would be no export of the coin deposited in the vaults of the treasury. . . He recalled that the conference had recommended that certificates should remain unconvertible until 1925, subject to gold not returning to parity. But since the conference was held in October a dramatic change had taken place, which, had it been foreseen, would have rendered the holding of the conference unnecessary. He mentioned that the value of the paper pound was now within 1s. 6d. of the value of the gold coin. He believed that the real reason of this recovery of the sterling dollar exchange was the confidence on the part of the American public in Great Britain's ability to restore her monetary position. He thought the best course to follow was to wait and see. There was time before June 30 next year to consider the position in regard to the gold certificates. This step, it will be seen, is in accord with the advice given by Mr. Samuel Evans on the subject, and emphasised [illegible] Mines meeting.

De Beers Not Resuming Yet.

A report has appeared in the *Sunday Times* in which our contemporary asserted that it learnt "on very good authority that quite a number of men have been asked to return to work by the De Beers Consolidated Mines, Ltd." The paper [illegible] believed that operations would start on anything like a great scale within the next few weeks, the fact that men had been asked to return to work showed that this may be the beginning of a general resumption of operations on the mines in the near future. We find on inquiry that there are no justifiable grounds for this assertion. Of course, if the present small demand increases and becomes normal the mines will again start working as a natural consequence.

Engineering Advances in South Africa.

The [illegible] development of engineering in South Africa during recent years of depression was the keynote of the valedictory address of the retiring president of the South African Institution of Engineers (Mr. R. C. Atkinson) at the annual meeting held in the Scientific and Technical Club on Wednesday night. Mr. Atkinson referred to the losses caused to the mining and other industries and to the country by the strikers and the attempted revolution. In spite of troubles, however, the years 1921 and 1922 would, he said, be notable by virtue of several important developments, which will have far-reaching effect in the future. Among these were: (1) The establishment of a gold refinery on the Rand; (2) the electrification of sections of the South African Railways; (3) the construction and erection of new gold mine reduction works, with gravity stamps eliminated and the adoption of an all-sliming process; (4) the installation of grain elevators throughout the Union, including Durban and Capetown; and (5) prospective developments in wireless telegraphy between the Union and the rest of the world. A study of all that these items entailed in the shape of work and a full understanding of all they meant to South Africa, he declared, immediately dispelled any pessimistic tendencies in the contemplation of the future of this great country. Nay, further, when it was realised that the plans for these various undertakings were inaugurated, perfected and launched during years of depression, high costs and the most adverse conditions generally, [illegible] infused with the most enthusiastic optimism.

New Mining Legislation.

The new Mining Law Amendment Bill passed its second reading this week, and has been reported to a Select Committee, where it may posssibly be much improved in several respects. Mr. Malan, in replying to the debate, said that a Bill consolidating the mining laws of the provinces would have to wait a long time. In fact, he doubted whether they would ever have one, owing to the fact that it would necessarily affect vested rights. For instance, it would be impossible to bring the diamond laws of the Cape and Transvaal into line without injury to one interest or the other.

Recent Labour Returns.

In the Assembly this week Major Hunt obtained from the Minister of Mines and Industries the latest Rand mines employment figures. Since March 9, 10,401 Europeans have been re-employed. At May 31, 15,152 Europeans were actually employed. Since March 31 there has been an increase of 31,742 natives. On May 31 the total number of natives employed was 157,073. Approximately 4,000 Europeans are still unemployed. On May 31 the ratio of coloured to European employes was 10·4 to 1. The ratio on January 1 was 8·3 to 1. "The colour bar regulation is being strictly enforced on the Witwatersrand gold mines," added Mr. Malan.

Ex-Enemy Shares Produce £4,000,000.

It is estimated that the recent acquisition of the balance of the "C.M.S." groups' ex-enemy scrip will involve over £300,000. The "Corner House" deal, of which we have given full details in recent issues, represents some £2,600,000. The Johnnies group is paying for its ex-enemy shares well over £500,000. The Goerz and Albu deals probably involved somewhat lesser amounts. Altogether, however, the ex-enemy holdings disposed of by the Union Custodian recently will obviously bring in at least £4,000,000. This will be borrowed by the South African Government and Union 4 per cent. scrip issued in exchange to the former ex-enemy holders.

It is of interest to note that, as regards Corner House companies, the approximate numbers of the shares bought and the prices compared with the May 22 London market quotation agreed with the Union Custodian are as follows:

No.	Ex Enemy Shares.	Agreed price		Price May 22	
70,000	Bantjes Consolidated	5	0	6	6
70,000	City Deep	32	6	16	10½
28,000	Crown Mines	31	0	39	1½
35,000	Consolidated Main Reef ...	7	3	11	9
15,000	Durban Roodepoort Deep ...	2	0	4	0
120,000	East Rand Proprietary... ...	1	0	7	3
19,000	Ferreira Deep	4	3	8	3
33,000	Glynn's Lydenburg	9	0	15	0
20,000	Geldenhuis Deep	3	0	6	3
52,000	Knight Central	3	0	4	6
236,000	Modderfontein B ...	27	0	33	1½
32,000	Modderfontein East ...	5	0	8	9
531,000	New Modderfontein ...	66	3	78	1½
37,000	Nourse Mines	7	6	11	9
36,000	Rose Deep	9	9	13	0
73,000	Rand Mines	39	0	49	1½
19,000	Robinson Gold	3	6	8	3
5,000	South African Rand Estate.	2	6	3	6
900	Swaziland Tin ...	2	0		
32,000	Transvaal Gold Mining ...	7	6	9	6
35,000	Transvaal Cons. Land	12	6	17	9
55,000	Village Deep	5	0	11	6
5,000	Witbank Colliery	37	0	42	6
89,000	Wolhuter	1	6	3	3
*	East Rand Debentures	80 p.c.		81 p.c.	

* Amount unknown.

The General Mining Group.

Full reports of the speeches at the various annual meetings of the Albu Group appear in this issue. Mr. A. French presided at all the meetings, and naturally a considerable portion of his remarks was devoted to the causes and effects of the recent trouble. At the Meyer and Charlton he was able to announce that owing to possession of a substantial cash reserve the company would pay its usual dividend of 50 per cent., and he pointed to this as a proof of the wisdom of building up such a reserve where possible. Perhaps the West Rand Consolidated is the most interesting of all the Albu mines, and its undoubtedly great possibilities were dwelt upon by the Chairman. Mr. French's speech reviews the position in detail, and shareholders will note that the directors' promise, if granted settled labour conditions, to make very strenuous efforts in the near future, "either to reconstruct or re-finance the company, if not for the whole scheme of expansion, at all events for the considerably increased scope of development which is so vital to the future prosperity of this concern." The prospects of this mine, under more favourable conditions, with its possible life of over fifty years, are certainly most attractive, and we hope to return to the subject in an early issue. The recent history of the New Goch is the same as that of other typical low-grade mines, and the Chairman said that from time to time in the course of the strike they seriously considered the advisability of closing down the mine permanently, but in view of the possibility of more settled industrial circumstances and more economical working conditions resulting from the prolonged struggle, the directors decided to carry on. As regards the future, he said: "As far as we can now judge, it would appear that there is a reasonable prospect of continuing operations on a profitable basis, and this is borne out to some extent by the working profit of £665 earned for April and £903 for last month (May), more especially in view of the fact that we were short of native labour during most part of the two months in question." The Roodepoort United has found it impossible to continue operations under present conditions, and the company is to go into liquidation. The position of the Aurora West is somewhat improved, and the Chairman was able to state that "taking into consideration the possibility of reduced costs which, as a result of post-strike reorganisation, it seems reasonable to assume, and the more favourable developments on the lower levels of the mine, the outlook for the company seems more hopeful than it has been for some years past, always provided that a reasonable supply of native labour can be maintained." As regards the Cinderella, the Chairman said that "the position was being carefully watched, and the directors were not without hope that the results of the operations on the working mines of the Rand during the remainder of the current year would be of such a nature that capital would be attracted to gold mining in South Africa, in which case the undoubted attractions which were held out by the large property could not fail to make themselves felt. Should such conditions materialise, it is hoped that the company may in the not too distant future be placed once more on the active list." The Rand Collieries is in much the same position, and everything depends on the future attitude of labour to these dormant propositions.

The Barnato Meetings.

The State Mines' annual meeting was easily the most interesting of the Barnato gatherings held last week and fully reported in this issue. It is true that there was nothing in the Chairman's speech to explain the recent sharp rise in the shares of the company, but the general statement in regard to the position was most encouraging. Mr. John Munro presided, and in his speech reviewed the results of last year and the improving profits earned each month since the strike. Work is now in progress on the central ventilation shaft, and there are rumours that the present reduction plant may be further increased. These rumours are entirely without official support, and the general and improved prospects of the mine, together with the June dividend declaration, must be written down as the causes of the greater public interest in the shares. At the Randfontein Central meeting Mr. Munro showed that the whole of the working profit was due to the premium on gold. He added: "With gold at its present figure last year's operations would have resulted in a substantial loss, and, if we are to carry on mining successfully when gold falls to the standard price, considerable reductions will have to be made in working costs." The mine is laid out to cope with a large tonnage of ore, and in order to keep the mill fully supplied a plentiful supply of native labour is essential. Randfontein in the past has not been a popular mine with the natives, owing chiefly to the steepness of the reefs and the large amount of climbing which had to be done in the southern section. This latter disability has been removed by bringing into commission the two new vertical shafts. During the year the native labour strength never reached more than 59 per cent. of the underground complement allotted to the mine, and, although generally speaking native labour was plentiful on the Rand during the latter half of 1921, yet Randfontein suffered severely from a shortage throughout the year. Conditions have improved and everything possible has been done to attract the natives, but the natural handicap of steep reefs will always remain. During May development was restarted on a limited scale. The mine is still very short of natives, but it is hoped that an improvement will soon take place in this respect, and that with the resulting increase in tonnage milled it will show increased monthly profits.

At the Van Ryn Deep, Mr. Munro mentioned the reorganisation of the transport of ore underground, together with the comprehensive ventilating scheme, both necessitated by the extension of the mine workings, which were carried out during the year. In addition, a large programme of repair and replacement was called for both on the surface and underground. All this meant largely increased costs during the period of alteration and repair, but it is confidently hoped this will in the future result in a material reduction in working costs. The benefits of improved ventilation, transport of ore, etc., are reflected in the returns of May this year, which show a high underground efficiency both in stoping and tramming. The chairman added that in May 36,500 tons were crushed resulting in a profit of [illegible] but owing to the [illegible] in the native labour [illegible] development. "During the past [illegible]," he said, "[illegible] position."

The feature of the Langlaagte Estate meeting was the [illegible] in conjunction with the Crown Mines, Ltd., purchased the [illegible] property consists of 109 claims, and lies between the Block B ground and the Crown Mines. The railway line has been [illegible] taking 55 claims south-east of the railway line and the Langlaagte Estate taking 54 claims north-west of the line. It is [illegible] should prove a valuable asset and materially prolong the life of the Langlaagte Estate.

At the Consolidated Langlaagte meeting the chairman [illegible] labour since the strike it had been impossible to carry on [illegible] sumed as soon as the native labour position warranted, and it was hoped that with reduced costs and improved efficiency [illegible] regular monthly profits.

The position [illegible] chairman showed that with the cost of production standing at 90s. 4d. per ounce, if the price of gold continued to fall [illegible] costs if the mine was to continue profitable operations. [illegible] gold at 105s. 10d., 15s. 6d. per fine ounce.

At the New State Mine the position was summed up by the chairman saying: "The development accomplished proved that there are large blocks of payable ground in sight and justified the ordering of the reduction plant (which is [illegible] I may here mention that the payable ore developed at April 30 last amounted to 482,000 tons of an average value of [illegible] 67 inches. [illegible] connecting drive was advanced from each shaft, and at the end of the year there remained 1,450 feet still to be driven. It is expected that the connection between the shafts will [illegible]

Notes & News.

Gold at Lowest Price.

[illegible] dealers, state that last week's price of 91s. 6d. is the lowest fixed for exportable gold since free dealings were resumed in September, 1919. This result is due to the easing off in the demand from India, in addition to the firmness of [illegible]

* * *

Transvaal Development.

[illegible] curtailed. Although [illegible] dividends have been in excess of the 1920 figures and sales of investments brought in considerably more, yet the land sales fell off [illegible] the result that the total income was some £1,500 less at £42,231. Administrative expenditure was slightly lower, but heavy taxation charges had to be met, so that the balance for the year of £26,577 is within about £150 of that for the preceding twelve months.

The Central Mining and the Diamond Revival.

The [illegible] share free of income tax, making 12s. for the year. The [illegible] compared with [illegible] last year. The report mentions that the diamond trade, in which the company is interested, shows distinct signs of revival.

* * *

New Vaal River Diamond Company.

At the [illegible] annual meeting of shareholders of the New Vaal River Diamond and Exploration Co., Ltd., at Kimberley, this week, Major H. P. Tuckey said the shrinkage in the company's revenue was entirely attributable to the continued depression in the diamond industry, and though those most intimately connected with the industry were hopeful of an early recovery, there were to-day no signs of an abatement of the slump. Diamonds, being an article of pure luxury, are necessarily affected by bad times. When economic conditions were adjusted, as undoubtedly they would be, a speedy recovery of the diamond market may confidently be expected.

* * *

The New Kleinfontein Year.

Sir [illegible] Dalrymple's notable speech at the annual meeting of the New Kleinfontein G.M. Co., Ltd., appears in another part of this issue, and will be found to throw a lot of light on the recent history of the industry. The New Kleinfontein has been particularly hard hit by the increase in cost of production, and its very existence as a large spending organisation has been seriously threatened. The Chairman's very straight speaking on the position should carry weight with all concerned, and it may be hoped that under the new [illegible] this great gold mine may enjoy a new lease of life.

* * *

French Shareholders and Ex-Enemy Shares.

In connection with the offers of ex-enemy shares to French holders, with the provisional letters of acceptance was enclosed a slip bearing the following:—"For the present French shareholders must make personal application to the Committee on the Export of Capital of the Ministry of Finance for permission to remit to London. Application for a general authorisation has been made, the decision of the Ministry of Finance regarding which is expected in a day or two and will be communicated to French shareholders without delay." Strictly speaking, under war-time legislation, it remains illegal to export capital from France, but we should imagine that there will be no difficulty in obtaining a relaxation of the regulation in the above and like special [illegible]

* * *

General Mining Corporation and ex-Enemy Shares.

The General Mining and Finance Corporation, Limited, has purchased from the Custodian of Enemy Property the whole of its shares formerly the property of ex-enemy [illegible] amounting to approximately 800,000 shares, [illegible] 2s. per share. It is the intention to utilise these shares in reduction of the Corporation's issued capital of 1,875,000 shares, and the difference between the nominal value of £1 per share and the purchase price will be available for writing-off depreciation of assets. The Corporation has also acquired, for its own account, all ex-enemy shares and debentures of the following companies: Aurora West Gold Mining Company, Limited, Cinderella Consolidated Gold Mines, Limited, Meyer and Charlton Gold Mining Company, Limited, New Goch Gold Mines, Limited, New Steyn Estate Gold Mines, Limited, Rand Collieries, Limited, Roodepoort United Main Reef Gold Mining Company, Ltd., Sacke Estates and Mining Company, Limited, West Rand Consolidated Mines, Limited, Van Ryn Gold Mines Estate, Limited.

May Gold Output : Group Returns.

CENTRAL MINING/RAND MINES GROUP.

The following are the results of operations at the mines of the Central Mining Rand Mines group for the month of May:—

Company.	Tons crushed.	Yield in Fine Gold Ozs.	Estimated Value.	Estimated Profit
City Deep	84,000	34,979	£157,845	£50,831
Cons. Main Reef	45,600	15,855	71,546	5,031
Crown Mines	161,000	49,478	223,271	44,672
Durban Rood. Deep...	26,500	8,675	39,145	1,382
E.R. Proprietary	102,000	26,012	117,315	642
Ferreira Deep	20,200	5,278	23,819	Loss 3,024
Geldenhuis Deep	48,178	12,259	55,199	221
Knight Central	24,000	5,286	23,851	1,287
Modderfontein B. ...	55,000	27,549	125,004	60,965
Modderfontein East ...	25,900	8,823	39,812	Loss 1,014
New Modderfontein ...	98,000	43,677	197,092	99,471
Nourse Mines	42,500	13,489	60,869	8,026
Robinson	13,500	4,593	20,728	4,044
Rose Deep...	43,400	10,744	48,483	6,486
Wolhuter	32,000	6,991	31,545	Loss 1,511
Village Deep...	52,000	16,548	74,526	10,982
Totals and Averages	873,778	290,236	£1,310,050	£288,491

Working Costs.—City Deep, 25s. 5.8d.; Cons, Main Reef, 29s. 2.1d.; Crown Mines, 22s. 2.2d.; Durban Roodepoort Deep, 28s. 6.0d.; East Rand Proprietary, 22s. 10.5d.; Ferreira Deep, 26s. 6.9d.; Geldenhuis Deep, 22s. 9.9d.; Knight Central, 18s. 9.6d.; Modderfontein B., 23s. 3.4d.; Modderfontein East, 31s. 6.3d.; New Modderfontein, 19s. 11.1d.; Nourse Mines, 24s. 10.4d.; Robinson G.M. Co., 24s. 8.6d.; Rose Deep, 19s. 4.2d.; Wolhuter, 20s. 7.9d.; Village Deep, 24s. 5.3d. Average, 23s. 4.6d.

Ferreira Deep.—The loss made is consequent on the continued curtailment of operations due to the fall of rock and fire in No. 1 Shaft in December last. The shaft will be in commission again during the current month, when it is hoped that revenue will balance expenditure, and thereafter normal profits be earned."

Modderfontein East.—Loss for month due to abnormally low yield.

Wolhuter.—The loss made is due to low yield.

General Note.—During the course of the past month the native labour position improved materially on all the mines of the group, enabling increased tonnages to be milled in all cases. The full effect of the increase will, however, only be obtained during the current month, which promises to show a further increase in the native labour force. The valuation of gold has been taken at £4 10s. 3d. net.

BARNATO GROUP.

The following are the results of operations at the Barnato group of mines for the month of May:—

Mine.	Tons Crushed.	Revenue from Gold. £	Total working Costs £	Working Costs per Ton Milled. Shillings.	Gross Profit including Sundry Revenue £
Consolidated Langlaagte... ...	33,600	44,550	39,859	23.725	5,051
Government G.M. Areas ...	139,000	280,323	120,792	17.380	160,328
Langlaagte Estate	40,700	59,833	46,571	22.885	13,559
New Primrose	16,500	17,763	16,943	20.537	1,036
New Unified	10,600	10,206	9,273	17.495	1,002
Randfontein Central	103,500	143,263	123,137	23.795	21,516
Van Ryn Deep	54,000	117,418	55,669	20.618	62,490
Witwatersrand	33,000	45,310	35,738	21.659	11,156
Totals and Averages	£430,900	£718,666	£447,982	20.792	£276,138
April Totals	£339,980	£554,883	£380,392	22.377	£179,900

Note.—The above results are arrived at by calculating the gold at £4 12s. per fine ounce.

CONSOLIDATED GOLD FIELDS.

The following are particulars in regard to the outputs of the producing mines of the Consolidated Gold Fields group for the month of May:—

Company	Stamps Running	Tube Mills Working	Tons Crushed	Gold Declared Fine ozs	Total Profit Declared, including Sundry Revenue
Simmer and Jack...	320	7	37,600	9,523	Loss £3,081
Robinson Deep ...	145	9	51,500	16,154	Profit 11,122
Sub Nigel	30	2	8,800	5,714	Profit 5,459
Totals	495	18	97,900	31,391	Profit £13,500

Gold in Reserve.—Simmer and Jack, 900 oz.; Robinson Deep, 1,495 oz.; Sub Nigel, 2,108 oz. Total, 4,503 oz.

The revenue derived from gold for the month of May is calculated at the rate of £4 12s. per fine oz., less estimated gold realisation and exchange charges of 1s. 6d., or a net figure of £4 10s. 6d. per fine oz.

Simmer and Jack.—The loss was due to temporary falling off in grade and low tonnage milled. It will not be possible to mill at full capacity until Milner Shaft is ready to be put in full commission, which it is hoped will be in August, when improved grade and considerable reduction in costs can be expected. Meanwhile, every endeavour is being made to improve both grade and tonnage during June and July.

March Coal Returns.

A Government statement shows that the quantity of coal in tons bunkered at, or exported from, South African ports during the month of March last were as follows—

	Bunkered.	Exported.
Capetown	9,874	8
Port Elizabeth	438	0
East London	102	0
Other Union Ports	121	0
Durban	80,695	107,662
Delagoa Bay	18,257	63,521
Total	109,757	171,191

CONSOLIDATED MINES SELECTION GROUP.

The following are the results of operations for the month of May, 1922:—

	No. of Stamps Working	Tons milled	Working Costs per ton milled		Value of Gold Declared	Yield per ton	
			s.	d.	£	s.	d.
Brakpan	120	52,500	25	7.6	£106,956	40	8.9
Springs	80	43,500	26	6.9	76,859	35	4.1
Totals & Averages	200	96,000	26	0.7	£183,815	38	3.5

	Working Profit based on standard value of Gold: Total	per ton		Estimated Premium taking gold at £4 12 0 per fine oz. less Exchange on Remittances	Total Estimated Profit
	£	s.	d.	£	£
Brakpan	£39,679	15	1.4	£7,018	£46,697
Springs	19,052	8	9.1	5,263	24,315
Totals & Averages	£58,731	12	2.8	£12,281	£71,012

GENERAL MINING AND FINANCE CORPORATION.

The following are the results of operations at the mines of the General Mining and Finance group of companies for the month of May:—

Company	Tons Crushed	Total cost	Cost per ton
		£	s.
Aurora West	9,400	10,754	22.88
Meyer and Charlton	12,000	14,575	24.29
New Goch	16,550	16,176	19.55
Roodepoort United	9,450	10,126	21.43
Van Ryn Estate	26,900	31,472	23.40
West Rand Consolidated	32,500	38,138	23.47
	106,800	£121,241	22.70

Company	Total revenue	Profit
	£	£
Aurora West	£12,297	£1,543
Meyer and Charlton	31,783	17,209
New Goch	17,078	903
Roodepoort United	9,199	Loss 927
Van Ryn Estate	35,287	3,816
West Rand Consolidated	41,521	3,383
	£147,165	£26,854
	Less loss	927
		£25,927

In calculating the revenue, gold has been taken at a value of 92s. per fine ounce, less estimated realisation charges.

West Rand Consolidated.—Operations for month affected by fall of ground in Rand Shaft at beginning of May.

TRANSVAAL GOLD MINING ESTATES.

The following are the particulars of the output for the month of May, 1922, in respect of the above company:—Central Mines: Tons crushed, 12,000, yielding 3,661 fine oz. Elandsdrift Mine: Tons crushed, 1,790, yielding 975 fine oz. Vaalhoek Mine: Tons crushed, 2,000, yielding 778 fine oz. Estimated value of month's output, £24,326. Estimated loss for month, £1,225.

The gold output for the month is valued at £4 10s. per fine ounce net, after allowing for exchange and realisation charges. The loss was caused by increased expenditure on prospecting and development, full advantages being taken of temporary abnormal supply of native labour.

GLYNN'S LYDENBURG.

The following are the particulars of the output for the month of May, 1922, in respect of the above company:—Tons crushed, 4,036, yielding 1,464 fine ounces. Estimated value of month's output, £6,578. Estimated profit for month, £1,634.

Note.—The above figures are exclusive of expenditure for the month upon shaft sinking, special development and capital expenditure amounting to £1,345. The gold output for the month is valued at £4 10s. per fine ounce net, after allowing for exchange and realisation charges.

WITWATERSRAND DEEP.

The estimate of results for the month of May, 1922, is as under:—Tons milled, 30,000; gold recovered, 9797.678 oz.; average of stamps running, 180; stamps, running time, 18.304 days; tube mills, 5. The working expenditure, including head office charges, for the month is £34,903 or 23s. 3d. per ton. The estimated working revenue based on an estimate of £4 12s. per fine oz. (less 1s. 9d. realisation charges) is £44,213 or 29s. 5d. per ton. The estimated working profit is £9,310 or 6s. 2d. per ton, from which is to be deducted the capital expenditure for the month of £303, leaving a surplus of £9,007.

UNION CORPORATION GROUP.

The following are particulars of the operations on the producing mines of the Union Corporation group for the month of May, 1922:—

Company.	Stamps.	Tons Crushed.	Fine Ozs.	Revenue (Including Sundry Rev Total	Per t.)
					s. d.on
Geduld Proprietary	100	45,800	16,333	£75,465	32/11
Modder Deep	70	44,400	23,592	107,933	48/7
Totals and Averages	170	90,200	39,925	£183,398	40/8

Company.	COSTS. Total.	per ton.	PROFIT. (including Sundry Re Total.	per tov)
	£	s. d.	£	s. dn
Geduld Proprietary	£47,549	20/9	£27,916	12/2
Modder Deep	42,756	19/3	65,177	29/1
Totals and Averages	£90,305	20/0	£93,093	20/8

The above results are arrived at by valuing gold at 92/- per fine ounce. Realisation charges in excess of normal are debited direct to revenue.

Miners' Phthisis: £14,000,000 Liability.

The Select Committee on Public Accounts has presented its report, in the course of which it says it is not satisfied with the Treasury Minute in reply to its resolution of 1921 suggesting the closer control of free services. From the evidence given by the officials of the Miners' Phthisis Board, the Committee notes that no adequate fund has been built up to meet the liabilities accruing in consequence of the 1919 legislation. The Compensation Fund, out of which compensation has to be paid to Miners' Phthisis victims, has still to face a liability estimated at £14,000,000. This liability has to be met from levies on the mines without any contribution being required from the miner and, as the exhausted mines close down, falls with cumulative effect on the surviving mines. The Committee considers no time should be lost to secure an actuarial valuation to determine the exact position, in order to lay down the permanent policy and measures to be taken to ensure the adequacy of the fund.

ENGINEERING SECTION.

New Mozambique Cement Factory.

EQUIPMENT DESCRIBED.

The Portland cement factory of the Mozambique Cement Company will have an output of 700 tons of Portland cement per week.

The method of manufacture is upon the wet process. The raw materials are brought to the factory by barge, where they will be unloaded upon a jetty and transferred to the factory.

The limestone is fed to jaw crushers, 1,000 mm. by 500 mm., after which it passes through crushing rolls. This reduces the limestone to approximately walnut size. It is then elevated into a hopper over a compound ball and tube mill, 11 metres long and 1.8 metres in diameter. The clay, when delivered to the factory, is first dealt with in a wash-mill, after which it is pumped into the compound ball and tube mill and ground with the limestone. Water is introduced into the grinding mill, and the limestone and clay are ground together in the wet state (about 40 per cent. of water) to a fineness of about 10 per cent. on 180-mesh sieve.

The "slurry," as it is termed, coming from the compound ball and tube mill is elevated into one of three mixers, where it is thoroughly mixed and proportioned. One mixer is of sufficient capacity to enable the kiln to run over the week-end without re-filling. The slurry transport and agitation is carried out in a special manner. Hitherto, slurry has been pumped by plunger or centrifugal pumps, and agitated mechanically. In this factory, however, completely new methods are introduced, and the slurry is elevated by means of pressors and is agitated in the tank by means of blasts of compressed air. When found to be of correct proportions for calcining, the mixing tank is sealed and is used for the supply of the kiln. It is pumped into a small tank over the feed end of the rotary kiln and gravitates into the kiln. The kiln itself is 56 metres long and 2,800 to 2,300 mm. in diameter. The plates in the firing zone are approximately $\frac{7}{8}$in. in thickness, and the kiln is furnished with four cast-steel rollers and a cast-iron rim for the drive. The cooler is attached to the kiln in prolongation. This attachment permits of several advantages, notably, only one motor to drive, instead of two where the cooler is separate; much lower foundations; absence of stairs, gangways, etc., and perfect accessibility and easy attendance. Furthermore, no movable kiln head is required; and a considerable saving through the utilisation of heat radiated from the material passing through the cooling section is effected.

Coal is supplied to the kiln in the following manner: When delivered to the factory, by trucks run in on the company's siding, the coal is first crushed and thoroughly dried in a rotary drier. It is then passed through a small compound ball and tube mill, 8 metres in length and 1.4 metres in diameter. It is then elevated into a storage hopper, from which it is wormed into the coal feed pipe through which a continuous blast of air passes by means of a high-pressure fan. The clinker coming from the cooler is taken on a shaker conveyor to the boot of an elevator, which elevates on to another conveyor running over the whole length of the clinker store. Sufficient storage has been allowed for four weeks' output at the rate of 1,400 tons per week (the factory is so designed as to permit of duplication in the near future). The clinker is reclaimed by a conveyor running underneath the clinker store house, and after the gypsum has been added is elevated over a compound ball and tube mill for clinker grinding. The cement is ground to a fineness of 8-10 per cent. on 180-mesh sieve, and is wormed and elevated into the cement store, where automatic sack-packing machines have been provided.

MAY COMPANY REGISTRATIONS.

The list of companies registered in May, 1922, as as follows:—

Roselin Trading Company, Ltd. : capital, £10,000.
Calcutta Canvas Company, Ltd.; captial, £5,000.
Taylors, Ltd.; capital, £500.
The United Tailoring Company, Ltd.; capital, £1,000.
Wises, Ltd.; capital, £5,000.
Mark Wilson, Ltd.; capital, £10,000.
District Dairy Farmers, Ltd.; capital, £1,500.
The Eastern Transvaal Garage, Ltd.; capital, £1,000.
Spes Bona Mines, Ltd.; capital, £15,000.
Fred Cohen Goldman and Denver Cartage Company, Ltd ; capital, £20,000.
The National Clothing Company, Ltd.; capital, £2,000.
Gemsbokpan Gold Mining Company, Ltd.; capital, £10,000.
The New West Rand Mineral Water Works, Ltd.; capital, £5,000.
Delarey Trading Company, Ltd.; capital, £1,000.
Selfridge's (South Africa), Ltd.; capital, £3,000.
Pretoria Music Saloons, Ltd.; capital, £80.
South African Trading Company, Ltd.; capital, £600.
Fairview Pharmacy, Ltd.; capital, £2,000.
The Rand Office and Shop Furnishing Company (1922), Ltd.; capital, £2,250.
Roomer & Company, Ltd.; capital, £750.
Enduro, Ltd.; capital, £3,000.
The British Advertising Company, Ltd.; capital, £600.
New Border Oils, Ltd.; capital, £5,250.
Stein & Company, Ltd.; capital, £1,000.
Heller & Company, Ltd.; capital, £5,500.
Clark & Jackson, Ltd.; capital, £10,000.
Union Farmers' Direct Supply, Ltd.; capital, £1,000.
Inventions and Industrial Development Corporation, Ltd.; capital, £5,000.
Rhodesian Tobacco Estates, Ltd.; capital, £25,000.
Clothing Factory, Ltd.; capital, £3,000.
The Eastern Land and Investment Company, Ltd.; capital, £1,000.
The African Land and Mortgage Company, Ltd.; capital, £1,000.
The May Syndicate, Ltd.; capital, £12,500.

Foreign Companies.

Natal Cambrain Collieries, Ltd.; capital, £100,000.
Unon Canning Company, Ltd.; capital, £100,000.
The Sheba Gold Mining Company, Ltd.; capital, £300,000.
The Wireless Agency, Ltd.; capital, £1,000.

Road Transport in South Africa.

A NEGLECTED NATIONAL QUESTION—MINING AND INDUSTRIAL DEVELOPMENT AFFECTED—URGENT NEED FOR CO-ORDINATED EFFORT.

In his paper, read at the annual meeting of the Institution of Municipal and County Engineers (African District) at Bloemfontein, the Chairman, Mr. D. E. Lloyd Davies, M.Inst.C.E., City Engineer and Surveyor, Capetown, deals with the road problem—a national question which he claims is shamefully neglected in South Africa.

Mr. Lloyd Davies at the outset remarks: The road problem in South Africa is, in common with the rest of the world, mainly one of finance. The great increase in transport, together with the ever-increasing proportion of self-propelled vehicles, already demand stronger and more scientifically constructed roadways than heretofore. To reconstruct the roads to satisfy the changed conditions has become a pressing necessity, particularly the main arteries passing through towns and the more densely-populated areas.

At the present time practically the whole of South Africa is served by main roads indifferently constructed, either with water-bound macadam (mostly devoid of foundation) or with gravel, and the cost of maintenance to keep them even in average condition is not commensurate with the service rendered. Some radical changes in the method of administration, construction and repairs will be demanded by the public in the near future. It is not yet generally realised that road transport ranks amongst the foremost of our great national services.

The Extent.

At the end of 1920 there were 58,932 miles of country roads and tracks maintained by the Provincial and District Councils; the length of town roads controlled by the municipalities amounted to 6,070, and the annual cost of upkeep to about £113 per mile; but in the larger centres, with heavy traffic, the cost of maintenance works out at about three times the town average for the Union.

It is proposed to confine these notes to the consideration of main arteries only, and these can be divided into three categories: (1) Main trunk roads passing through the towns; (2) main roads within municipal boundaries radiating from the business and commercial centres to the suburbs; and (3) trunk roads linking up the towns. (1) and (2) are maintained by the municipalities, with a subsidy from the Provincial Councils; whilst (3) are repaired by the District Councils, with a subsidy from the Provincial Councils, or by the Provincial Councils themselves.

Co-Ordination Necessary.

Main roads are of equal importance to the community as railways, and form an auxiliary to the general scheme for facilitating transport, of which the railways are the principal feature. All goods carried by the railways pass over the roads as well, and this is one of the principal reasons why the average town traffic is so much heavier than the average traffic on trunk roads, which the railways relieve. It appears rational, therefore, that development of our main roads should be forward hand in hand with railway development.

Much money will be saved in future, and the mistakes of the past avoided, if an outline scheme for future railways and main roads is prepared for each Province, on the same lines as a "town plan" for a city. This can be accomplished by collaboration between the Railway Administration and the Provincial Councils. On such a plan all the existing railways and main roads should be shown, the latter being classified according to the traffic carried.

The correct design of a new main road is subject to the same principles as the design of other engineering works, but in practice it is seldom that a road is scientifically designed in this country owing to the rough-and-ready methods in vogue.

The principal factors governing scientific road design are: (1) The estimation of the amount of traffic it will have to carry when completed, and (2) the estimation of the amount it will have to carry in future. The preliminary width and the character of the roadway will be subject to (1). The ultimate width of the road depends on (2), and sufficient land should be reserved for this purpose. The estimation of the amount of traffic on a new road would be based upon the results of records taken on existing roads of a similar type.

Main Roads in Towns.

The main roads in the older South African towns were designed many years ago to carry comparatively light draught traffic, as at that time the motor-car was unknown. They have served their purpose, but they are out of date now, and quite unable to stand up to the intense traffic met with in the city of to-day. Therefore it is not difficult to prove, with the aid of proper statistics, that it will handsomely pay a large town to reconstruct its roads to meet modern conditions, but to do this in a business like manner it is necessary to keep the annual maintenance costs on each road separately, and to take a traffic census over the same lengths, to ascertain the duty they have to perform.

In Capetown the maintenance charges to each street or road are posted weekly on the card system, and the costs are ascertainable at the head office within one week of any given date. It will be helpful if particulars in regard to the cost of cleansing, watering and interest and sinking fund charges are included in the return. The average width and area maintained, as well as the length must be given, in order that the costs may be reduced to the superficial yard.

The average cost of maintenance of a road carrying unit traffic is, according to the Capetown records, about 1d. per square yard per annum for an ordinary water-bound macadam road, exclusive of cleansing, watering and unexpired loan charges.

Maintenance.

Very few people walking or driving in the busy streets of a large town have any conception of the importance of roads to the community. They are, as Lord Montagu of Beaulieu puts it, the veins and arteries of the nations.

The man in the street seeing road repairs being carried out might, perhaps, be curious as to the reason for and the nature of the operations. Thence he might pass on to the question of the cost of such repair work, but he would not think of comparing it with the value and expense to the community at large of that immense service of transport made possible by the existence of the road. If told that the average cost of all that transport was no more than 15 times the cost of repairing the road, as a result of the traffic, he would rightly conclude that the construction of the road was at fault and unequal to the duty required of it. But it can be shown that this ratio is very nearly true of the average main road within the Capetown area.

The average annual ton-mileage of transport upon the adopted roads in the Municipality of Capetown is found from a recent traffic census to be about 50 millions, excluding all traffic over the strips maintained by the tramway companies. This total includes weight of animals and vehicles as well as freight. Judging from local tariffs the cost of transporting one ton one mile (gross load) would be about 6d.

Fifty million sixpences make £1,250,000—the estimated communal value of the annual service of transport, public and private, enjoyed by the citizens of Capetown over the roads maintained by the Corporation. Excluding cleansing, watering, and unexpired loan charges (which bear no constant ratio to volume of traffic ; the annual cost of road repairs for Capetown during the past triennial period is £80,000—which is 6·4 per cent. of the former amount.

Owing to the high price of tar since the war, the cost of re-coating the tarred roads has been abnormally high; on the other hand many of the busiest streets are paved with materials less costly to maintain than ordinary macadam. But the majority of the roads are still paved with the old-fashioned water-bound macadam, and the average cost of maintenance of the roads has been dominated by this fact. Independently of the above figures it is found that the average annual expenditure in repairing a macadamised road is about 0.4 of a penny per ton-mile. This again gives a ratio to haulage costs of 6·6 per cent., confirming the above estimates.

The above estimate of the community value of the road transport of Capetown may be extended in principle to the whole of the Union. The white population of Capetown is about one-sixth of that of the combined towns of the Union, excluding those with less than 2,000 inhabitants. Volume of traffic in towns being roughly proportionate to population, it may be assumed that the total community value of road and street traffic for the combined towns is about six times that of Capetown, or £8,000,000 per annum. But this is probably less than half the total value for the whole of the Union, which would reach a sum comparable with the other great national services, such as railways.

Financial Benefit.

The extent to which the reconstruction of our main roads will pay the community depends almost entirely on the amount of traffic carried, and the position in Capetown being analogous to practically all large towns in South Africa, can be taken as a fair example.

About 16 per cent. of the total road area within the municipal boundaries can be classified to-day as main roads under heavy traffic, and 45 per cent. of the total traffic is carried by them. Of these roads only about one-seventh have hitherto been reconstructed on modern lines. Omitting the latter, these percentages become 14 and 40 respectively.

At the present time a sum of £32,000 is spent annually upon their upkeep, which, owing to heavy traffic, is quite inadequate to keep them in even passable condition.

It is estimated that a comprehensive scheme for reconstruction with a first-class modern pavement over the same area will cost at present-day prices £550,000. With a 5 per cent. interest and sinking fund payments based on a 30 years' life, the annual charge incurred works out at nearly £36,000.

The annual cost of upkeep of the better-class road surface will be, at the maximum, only one-half of that of the ordinary macadam, which represents an annual saving of £16,000, therefore the net extra annual cost of the reconstruction scheme will be approximately £20,000.

Road engineers estimate that tractive effort on a well-constructed modern road is at least 50 per cent. less than that on an ordinary macadam road in a poor condition. It is also generally accepted by experts that the cost of transport can be reduced by 15 per cent. as a result of substituting a good road for a bad one.

Now the roads under the reconstruction scheme carry 40 per cent. of the total transport in Capetown, and the total communal value of such transport has already been shown to amount to about £1,250,000 per annum.

Forty per cent. of £1,250,000 amounts to £500,000, and the 15 per cent. economy due to the reduction of tractive effort by the substitution of good roads for bad will amount to £75,000, which is from three to four times as much as the extra annual expenditure of £20,000.

Further economy will be reflected by the reduction in the annual sums spent upon street cleansing and watering, and the value of the decrease of the congestion, due to the frequent repairs required to inferior roads, must not be overlooked.

South Africa Behindhand.

South Africa is backward in regard to road transport matters generally, and, as stated at the beginning of this paper, its immense importance has not yet been fully realised. In Capetown, and this applies to South Africa as a whole, less than 40 per cent. of the traffic is self-propelled, as against 90 per cent. in Great Britain. The principal reason is that the condition of the main roads in most instances is not good enough to allow self-propelled commercial traffic to successfully compete with draught traffic. Such a state of affairs cannot be allowed to continue, difficult as it is to convince the taxpayer at any time that higher taxation will indirectly benefit his pocket.

There appears to be a need for some Government machinery to induce road authorities to reconstruct their main roads when it can be clearly proved that it will benefit the community to do so, and the incidence of taxation should be such that the road user bears his proper share, and vehicles should be taxed on a scale in accordance with the damage they are capable of inflicting upon the roads.

But these points open up other fields for careful investigation and thought, and they cannot be dealt with adequately within the limits of a single paper. The author would have liked to invite discussion upon the influence of vibration upon roads, and the desirability of the substitution of resilient foundations for the orthodox rigid types, but the introduction of this important subject must be reserved for a future occasion.

New Diamond Digging.

Portion of the farm "Avondster," in the district of Bloemhof, is proclaimed an alluvial digging, and was open to the public for pegging yesterday. Another proclamation affects the farm "Welverdiend," district Wolmansstad, where pegging may take place this week.

OSBORN'S
SPECIALITIES.

A Few of Them:

"MUSHET"
THE ORIGINAL HIGH-SPEED.
STEEL,
CAST TOOL STEEL,
DRILL STEEL, NICKEL STEEL,
SPRING STEEL,
RUSTLESS STEEL,
GRIZZLEY AND TUBE MILL BARS.

— GET THE BEST —
FROM
SAMUEL OSBORN (S.A.), LTD.,
Box 3162 JOHANNESBURG. 'Phone 4673
WORKS: CLYDE STEEL WORKS, SHEFFIELD

TRADE AND INDUSTRIES SECTION.

Week in the Mining Material and Engineering Trades.

BUSINESS DULL BUT SHOWING SIGNS OF BETTERMENT—IRON AND STEEL—TIMBER AND BUILDING MATERIALS—ELECTRICAL GOODS—BRITISH COAL REVIVAL—UNION'S CURRENCY—DIAMOND RUSH—ARGUS' SUCCESSFUL WIRELESS TELEPHONE VENTURE—METAL MARKET.

General.

The week under review has been characterised by dullness and inactivity, in keeping with previous weeks, with, however, a general feeling that we are on the eve of better times. There is no doubt that this month, so far as it has gone, compares badly with May in regard to orders and enquiries, but one must not forget that it is the mines' stock-taking month, and that, under the circumstances, requirements are necessarily cut down to a minimum. Last month appears to have been a good one, following on the devastating period of the upheaval, but unfortunately, owing to sundry causes, the improvement shown has not developed. The root trouble, of course, is the lack of ready money in circulation caused by the dislocation of the industry during the strike, which is affecting the Rand greatly and which optimism as to future prospects only palliates. Everybody, of course, knows that within measurable time we shall be all right, but the "anzwischen zeit" leaves much to be desired. Nor is the news from Europe regarding stabilisation satisfactory. France may be within her rights as regards reparations vis-a-vis Britain and other countries, but is undoubtedly a stumbling block to a general industrial agreement. The financial outlook in Europe is at present gloomy, to say the least, the extremly satisfactory position of Britain's credit, as exemplified by the surge of sterling towards American dollar parity, being counterbalanced by France's dog-in-the-manger policy. To steer clear of the well-nigh overwhelming difficulties of the present European situation and to restore more or less pre-war conditions is a task requiring the best brains of not only Britain and America, but of other countries. Is Lloyd George, in conjunction with his friends, capable of such a Napoleonic coup? We shall see in due course, but in the meantime things—big issues—remain suspended, and general business conditions continue more or less insecure, without that sound foundation which we are all expecting and have been expecting for so long a period, and which alone can give guarantees for future sound business. A keen mercantile observer this week said he saw signs of betterment in the near future, after we had passed the half-year's milestone, in the revivifying powers of many Government departments, strengthened by the usual half-yearly monetary grants, in developing schemes already under way, and he for one looked forward confidently to much better business conditions in the second half of the present year. He said the mining industry was "coming back" in respect of native labour (and consequently white) much more rapidly than was anticipated, and provided nothing untoward occurred in European affairs—that, of course, was the rub!—we could confidently look forward to more stable and satisfactory business conditions in the Union towards the end of the current year.

Iron and Steel.

Business, a leading merchant said, is quiet this month. This is June stock-taking month, and the mines are keeping things down to a minimum. Another leader confirmed this, and said, in his opinion, no real improvement could be expected before the end of the year. No further increase in business on the Commercial Exchange or outside of it, said an influential importer, could one reasonably expect at present. The main feature, he emphasised, was that the mines were gradually getting back to normal—in other words, more natives were being employed, more whites were being taken on, and in consequence the industry was gradually regaining normality, with its potential spending powers increasing month by month.

Latest quotations.—Dunswart iron, 18s. to 22s. per 100 lb. basis price: Union Steel Corporation, Ltd., 19s. to 22s. 6d.; imported iron and steel, flats, rounds and squares, from 25s. 6d. to 35s.; channels and joists, 25s. to 28s.; imported angles, 25s. to 28s.; smaller sizes, 2s. 6d. to 31s. 6d.; tee iron, 32s.; shafting, ¾ in. down to 3-16 in., 7½d. to 9d lb.; ⅝ to 1½ in., 6½d.; 1¾ in. to 6 in., 4¾d.; steel plates, 1-16, ⅛, 3-16, 23s. 6d.: 10 x 5 and larger, 25s.; ¼ to ¾, 21s.; spring steel, 7½d. to 8½d. lb.; bolts and nuts, hexagon, round, ⅜, 8½d. to 9¼d. lb.; ½ in., ⅝ and ¾, 40s. to 45s. per 100 lb.; hexagon nuts, ⅜, 8½d.; ½ in., ⅝ and ¾, 7½d.; fish plates, bolts and nuts, ⅜ in., 8d. lb.; ½ in., 6d.; ⅝ in., 5½d.; ¾ in., 5d.; dog spikes, 35s. per 100 lb.; rivets, ¼ in., 11d.; ⅜ in., 9d.; ½ in. and ⅝ in., 37s. 6d. to 40s. per 100 lb., ⅝ in. 50s.; brass rods, ¼ in. 1s. 5d.; ⅜ in. 1s. 3d.; ½ in. 1s. 2d.; ⅝ in. upwards, 1s. 1d. per lb.; hexagon brass rods, 1d. lb. extra; copper rods, ⅜ in., 2s.; ½ in., 1s. 11d.; ⅝ and upwards, 1s. 9d. lb.; tool steel, 2s. 11d. to 3s. 3d.; brass sheets, 1s. 10d. to 2s. lb.; copper sheets, ¼ in. to 18 gauge, 1s 10d. lb.; 20 gauge, 1s. 11d.; 22 gauge to 28 gauge, 2s. lb.; firebox copper, 2s. lb.; copper tubes, ¼ in., 3s. 3d.; ⅜ to ⅝ in., 2s. 6d.; ¾ to 4½ in., from 2s. to 2s. 4d. lb.; phosphor tin, 2s. 11d.; ingot tin (Lamb & Flag), 2s. lb.; ingot lead £28 per ton; drill steel, 5½d.; hollow, 7d. to 8d.; 1¼ in. 6½d. to 8d.; wire nails, 30s. to 35s.; shovels, 30s. to 40s. doz.; wheelbarrows, 35s. to 45s.; picks, 37s. 6d. to 50s.; pick handles, 19s. 6d.: hammer handles, 14 in., 7s.; 18 in., 7s. 6d. to 8s.; 24 in., 10s. to 11s.; 30 in., 17s. 6d.; 36 in., 25s.; piping, ¾ in., black, 4¾d.; 1 in., 5¾.; 2 in., 1s. 1½d.; galvanised, in., 5½d.; 1 in., 7¾d.; 2 in., 1s. 7d.; ¾ in. steam, 5¾d.; 1 in., 8d.; 2 in., 1s. 7d.: 1 C. steel coke tin plates, London, 1 C., 14 x 20, 180 lbs., coke quality, 19s. 6d., f.o.b. Swansea; 1 C., 28 x 20, 216 lbs., coke quality, £1 18s. 9d.; copper, £61 17s. 6d. cash, £62 three months; tin, £150 17s. 6d. cash, £151 17s. 6d. three months; linseed oil, £29 to £30 per ton, good demand; barbed wire, "Shorthorn," 69 lb., 13⅜ gauge, 19s. 6d. to 21s. per coil; plain galvanised fencing wires, No. 8 gauge, 100 lb. coils, 21s. 6d. per coil; No. 10 gauge, 100 lb. coils, 24s. 6d. per coil; No. 12 gauge, 100 lb. coils, 26s. 6d. per coil; bulb tee fencing standards, 14 lb., 19s. 6d. per dozen; 12 lb., 23s. 6d. per dozen; black baling wire, 14 gauge, 19s. per coil, 100 lb.; 12 gauge barbed wire, 22s. per coil, 96 lb.; plain wire, No. 8 galvanised, 21s. per coil, 100 lb.; fencing standards, 21s. for 12's and 24s. for 11's; droppers, 40s. per 100; screening, 3s. to 9s. 6d. per square yard; cyanide, 1s. 7½d.; zinc shavings, 1s. per lb.; asbestos slate ⅜ in. to ½ in., £35 per ton; ½ in. to ¾ in., £50; ¾ in. to 1 in., £75; 1¼ in. to 2 in., £120: blue No. 3, £25; ditto, No. 2, £30; ditto, No. 1, £38.

Union Steel Corporation (S.A.), Ltd.

This Corporation report themselves as busy, both in the execution of their contract in respect of the Union's elevators, material for which is being forwarded every day, and otherwise. One satisfactory feature is that inquiries are plentiful, which points to increased business in the near future. The Corporation are now, as was mentioned a few weeks ago would probably be the case, actually supplying 45 lb. rails.

Second-hand Machinery Material.

Since our last report several fresh small syndicates have started along the reef, and a good deal of machinery has been purchased. One big mill, of the heaviest type of stamps, will be erected close to the Luipaardsvlei, on the old Battery Reef series, within the next week or two. There have also been inquiries from Barberton and Rhodesia; from the latter for wood-working machinery, and several orders have been placed. There have further been several orders for boilers and engines from Natal way, which have been executed, and Johannesburg being the centre for practically all kinds of machinery required, inquiries come through daily from coastal ports. Actual machinery parts and machines are getting scarce for all classes of machinery until such time as another big company (save the mark!) shall be liquidated. It is very pleasing to see so many syndicates having started on those reefs which were discarded by some of our most eminent engineers. These reefs show good results, indeed surprising results, to the old hands, and are being floated into small syndicates, which are working and which are bound to make them pay. A good deal of machinery has been purchased for these syndicates. Wood and iron have also been in good demand, and a well-known dealer said he could confidently predict better times for second-hand machinery people and merchants generally.

Engineering Shops.

In this section things are jogging along much as before; no real improvement can be reported, nor can any be expected, said a well-known engineer, before the turn of the half-year, when better times are confidently expected.

Armstrongs Secure New Durban Contract.

It is reported that Armstrong, Whitworth & Co., Ltd., have received a contract for the supply and erection at Durban of two caissons for closing the weir and outer entrances to the new graving dock, with hauling machinery complete. The two caissons, of which the outer will carry vehicular traffic and the inner pedestrian traffic, are to be constructed at Messrs. Armstrong's shipyard, and the electric hauling machinery at Elswick.

British Engineering Strike.

As forecasted, this strike, like every other, has failed to get " ile," and engineering works on the Clyde and elsewhere have re-opened after a period of inactivity. Owing, however, to the present insufficiency of work, few men could be taken on, and a resumption to normal is expected to last two to three months.

South African Railways.

Tenders are invited up to the 26th inst. by the S.A. Railways and Harbours for the erection of the steel superstructures of two bridges on the North Coast line deviation, Natal, viz., five spans of 100 ft. over the Umhloti River, near Verulam, and three spans of 100 ft. over the Tongaat River, near Tongaat.

Electrification of Natal Line.

In the House of Assembly, Capetown, this week the Minister of Railways and Harbours stated that preliminary work is now proceeding in connection with the electrification of the Natal main line between Glencoe and Pietermaritzburg; that several contracts are still being negotiated, which, on completion, will be published; and that the power station will be located at Colenso if the tests presently being conducted prove satisfactory. The Minister further stated that the question of providing for the carrying out of heavy repairs to the electric locomotives and other equipment is under consideration, and that the contracts provide that South African labour shall be utilised wherever practicable.

Timber and Building Materials.

Business has been quiet during the past week; prices here are much the same, but the Baltic tendency is still towards increase. Stocks are good.

Timber prices.—3 x 9 deals, up to 18 teens 1s., over 18 teens, 1s. 1d.; scantlings, 10½d.; beaver boards, 4¼d. to 4½d.; floorings, 6d. to 6¼d.; ceilings, 4¼d. to 4½d.; Oregon, 5s. 6d. a cube; pitch pine, 7s. 6d. to 8s.; corrugated iron, 8d to 10d. with a firm tendency. Furniture timber: Burmah teak, 17s. 6d. per cube here for first quality, 14s. 6d. for second at the coast; American oak, 1 in., 10½d.; 1½ in., 11d.; 2 in., 11½d. at coast; and Japanese oak, 1 in., 1s. 1d.; 1½ in., 2 in., 1s. 2d., at coast; West African mahogany, 1 in. to 4 in. thick, 26s. 9d. to 27s. 6d. per cube, at coast; Rhodesian mahogany, 9s. per cubic foot at mills; Honduras mahogany, 30s. per cubic foot; American yellow pine, 1s. 6d. per foot of 1 x 12 here; American pine shelving, 10d. per ft.; 3-ply wood, 3 m.m. up to 5 m.m., alder and birch, 4d. to 6½d. per sq. ft.; oak and teak, 3-ply, 11d. per sq. ft. Prices for bricks are the same. Klompje bricks, 25s. per 100 at works; fire bricks, £10 per 1,000 at works; mixed, 70s.; wire-cuts, £4 10s. to £5; and £5 for pressed per 1,000, at kilns; columns from 20s. to 30s., according to size; roofing tiles, Marseilles, £25 per 1,000 at the works; chimney pots, 12 in., 7s. 6d.; 15 in., 9s.; 18 in., 10s. 6d.; dry red oxide, 16s. per 100 lbs.; white lime, 7s.; unslaked, 10s. 6d. per 180 lb. bag; 8 lb. bag, 1s.; blue lime, 4s. 3d.; blue plaster lime, 5s. 3d.; cement, 10s. 6d. a bag; damp course and roofing, 36s., 54s. to 55s. for 1 to 3-ply. Building operations remain very quiet and no great improvement in the opinion of an expert is expected, owing to the tightness of money, before the end of the year.

Second-hand Iron and Timber.

Dealers in the second-hand iron and timber yards report very little business doing, with few inquiries. Stocks are still scarce; prices are as they have been for some time: 6d. for iron, 8d. for timber.

Electrical Goods.

Inquiries this week elicited that business, both here and outside, is exceedingly quiet. There are, a prominent dealer said, still inquiries from the country, but little business results from them. There are big schemes in the air, but their fruition seems to be not yet. Prices here remain about the same and there are no alterations reported from Britain, but in Germany, this dealer said, prices are now much about the same as in England.

British Coal Revival.

One feature of the remarkable recovery of the British coal industry since the recent strike is emphasised by the recapture of Continental markets, whence large orders, including orders from the Berlin Municipality and the State Railways, have been received by Scottish coal owners. It is reported that British coal is being sold in Hamburg cheaper than coal from Upper Silesia.

Lower Paraffin Prices.

The " Gazette " gives the latest prices governing the sale of paraffin as follow:—For 150 degrees oil, to the retailer at the ports, 13s. 6d. per case, and 18s. per case of small tins. At other places the above prices plus charges. To the consumer the price is: At the ports, 15s. 9d. per case, 7s. 11d. for large tin, or 20s. 3d. for case of small tins, or 2s. 1d. per tin. At other places within 400 miles from nearest port, 16s. per case, 8s. per tin, 20s. 6d. per case, or 2s. 1d. per tin plus charges. Per bottle: At coast, 4½d.; elsewhere, 5½d.

Ex-Enemy Shares Purchase by General Mining Corporation.

The announcement of the taking up by the General Mining Corporation of approximately 800,000 shares, at the price of 2s. per share, has undoubtedly levelled things in the share market viewpoint. The Corporation has also acquired for its own account all enemy shares and debentures of allied companies.

Cement.

Latest reports are that things in this section are very quiet, that supplies are plentiful, and that prices are stationary. Large quantities of imported cement are still coming into the country and landing at prices with which local manufacturers cannot compete. This is due chiefly to the sea freight being approximately 20s. per ton less than mileage rates from local factories to the Union ports.

Reduction in Colliers' Wages.

A reduction of 6d. per shift in the present price of 24s. 6d. is announced from July 1st, with a probable further cut of 2s. to operate on August 1st, which will make the price 22s. per shift, or 2s. more than that prevailing on the gold mines.

Unemployment Problem.

Pretoria official reports show that unemployment has during the past few weeks eased off considerably, owing principally to the mining industry, the cumulative effects of which are expected shortly to relieve the worst effects of the recent upheaval. Mining is still the only live industry.

Port of Hamburg.

Owing to the increasing activity in the shipping port of Hamburg, improvements therein are proposed amounting to many thousands of pounds.

Johannesburg Trams.

The Johannesburg tramway earnings last week amounted to £12,723, as compared with £14,476 for the corresponding period of last year.

Wireless Telephony.

The "Argus" wireless telephone programme sent out on Monday last was, it is announced, a complete success. It was picked up everywhere, and even as far away as Port Nolloth, 280 miles away. The success of the innovation and its further development are eagerly looked forward to.

South African Reserve Bank.

The statement of the bank issued on June 10th showed ratio of cash reserves to liabilities to the public at 75.4 per cent.

Metal Market.

Latest London quotations: Standard copper closed at £61 10s. cash and £61 5s. forward; electrolytic copper, £69 10s. cash, and £70 10s. forward; standard tin at £151 17s. 6d. cash and £153 2s. 6d. forward; foreign lead at £24 15s. cash and £23 12s. 6d. forward; quicksilver at £11 15s., bar silver at 35⅝d., and bar gold at 91s. 9d.

"C.M.S." Subsidiaries.

LATEST PROGRESS REPORTS.

Brakpan Mines.

The Brakpan directors' quarterly report for the period ended 31st March, 1922, has the following:—Owing to the strike of mine workers on the Rand and the subsequent attempted revolution, the directors are unable to submit their report for the quarter ended 31st March, 1922, in the usual form. Appended will be found the salient features of the results of the curtailed operations for the period. Development: In the Nos. 1 and 2 shafts section of the mine sampling and measurement of development accomplished had not been completed at the end of the quarter. At No. 3 shaft 89 feet of development was done in the main incline north, all of which was off reef. At No. 4 shaft 146 feet were driven, but the results of sampling are not yet available. Reduction operations were carried on at the normal rate until the 9th January, and at a restricted rate during portions of February and March, 1922. During the whole period covered by this report 34,048 tons were hoisted, 3,500 tons of waste were sorted (equal to 16·430 per cent.) and 30,548 tons were milled, yielding 15,136·163 oz. of gold, equal to 9·91 dwt. per ton milled.

Bank fur Handel und Industrie: The Custodian of Enemy Property did not proceed with the further appeal referred to in the directors' report for the quarter ended 31st December, 1921, and the company's claim has been paid in full, with accrued interest, the details being as follows:—Capital, £7,000; interest, £3,557 10s.; total, £10,557 10s. The native labour force was seriously depleted owing to the departure of natives who had completed their contracts, and to the stoppage of all recruiting operations. The strength at the end of the quarter was 3,067 natives, as against 5,647 at the beginning of the strike period. The information at date is that the number of natives coming forward for work on the mines exceeds anticipations, but until the necessary complement has been obtained operations will, of course, continue to be below normal, with resulting effects on costs and profits. At the present time about 1,300 tons per day are being crushed. Dividend No. 20: Warrants in payment of the above dividend were issued to shareholders on the 10th February, 1922.

Springs Mines.

The Springs directors' quarterly report for the period ended 31st March, 1922, has the following:—Owing to the strike of mine workers on the Rand and the subsequent attempted revolution, the directors are unable to submit their report for the quarter ended 31st March, 1922, in the usual form. Appended will be found the salient features of the results of the curtailed operations for the period. Development operations were carried on until the 9th January, 1922. The footage accomplished totalled 832 feet, of which 495 feet were sampled, averaging 22·52 dwt. over 17·31 inches. Of the footage sampled, 245 feet, equivalent to 49½ per cent., gave payable results, averaging 29·58 dwt. over 23·45 inches. Reduction operations were carried out at the normal rate until the 9th January, and at a restricted rate during portions of February and March, 1922. During the whole period covered by this report 32,703 tons were hoisted, 6,013 tons of waste were sorted (equal to 14·381 per cent.), and 27,690 tons were milled, yielding 10,467·650 oz. of gold, equal to 7·56 dwt. per ton milled. Under the agreement in connection with the acquisition of the lease area, the Consolidated Mines Selection Co., Ltd., took up during the quarter 20,000 shares in the unissued working capital of the company, at £3 per share, of which 18,000 shares were in respect of "Further Working Capital," and 2,000 shares were issued in connection with the redemption of debentures. The issued capital of the company is, therefore, now £1,347,236. The capital expenditure during the quarter amounted to £8,753 4s. 10d. The native labour force was seriously depleted owing to the departure of natives who had completed their contracts, and to the stoppage of all recruiting operations. The strength at the end of the quarter was 3,183 natives, as against 4,693 at the beginning of the strike period. The information at date is that the number of natives coming forward for work on the mines exceeds anticipations, but until the necessary complement has been obtained operations will, of course, continue to be below normal, with resulting effects on costs and profits. At the present time about 1,450 tons per day are being crushed. The working agreement entered into with West Springs, Ltd., for a period of four years from the 30th September, 1918, has been renewed for a further period of four years, until the 30th September, 1926. Warrants in payment of dividend No. 6 were issued to shareholders on the 10th February, 1922. The thirteenth annual general meeting of shareholders will be held at 12 noon on Monday, the 29th May, 1922, in the Board Room, Second Floor, Corner House, Johannesburg.

The Week's Meetings.

THE BARNATO GROUP.

NEW PRIMROSE, LTD.

SATISFACTORY INCREASES.

At the annual meeting of shareholders of the New Primrose Gold Mining Co., Ltd., held yesterday, Mr. J. Munro presided and there were also present Messrs. J. H. Crosby, F. L. Marx, R. L. Innes, W. M. Munro, G. J. Joel, F. Hall (secretary) and E. H. Francis (transfer secretary).

In moving the adoption of the report for the past 12 months, ended December 31, 1921, Mr. Munro said:—

The ore crushed during the year amounted to 256,700 tons, being an increase of 24,600 tons over the quantity crushed for the previous year, and the gold recovered totalled 55,520 fine ounces, as compared with 47,484 fine ounces in 1920. The average value of the gold produced amounted to 22s. 11d. per ton as compared with 23s. 1d. in the previous year, the decrease being due to the lower price obtained for the gold.

The ore milled was of slightly higher grade, and the working cost at 19s. 11d. per ton milled was 6d. per ton lower than for 1920. These factors, together with the increased tonnage milled, notwithstanding the lower price obtained for gold, resulted in a working profit of £38,595, an increase of £6,880 over the previous year.

Dividends of 5 per cent. and 7½ per cent., absorbing £40,625, were declared payable to shareholders registered on June 30 and December 31, 1921, respectively.

The ore reserves are practically exhausted, and the mine is dependent on reclamation over a wide range of workings.

The strike and outbreak which occurred early this year very seriously affected the position of the company. As you know the mine was attacked by the Germiston commando, in which attack eight natives were killed, and Mr. Bruce, the manager, was severely wounded. During the period of the strike the essential services were carried on by the staff, to whom on behalf of shareholders the board of directors conveyed their appreciation and thanks for the excellent services rendered by them.

Last Quarter's Loss.

In consequence of the strike only 16,000 tons were milled during the first quarter of the year, the loss for that period amounting to £19,774.

During the month of April, in spite of the wastage in the native labour complement, 14,500 tons were milled, which, with the addition of the sundry revenue, resulted in a profit of £162.

During the past month there has been some increase of natives, but the position is far from satisfactory in this respect, and the tonnage crushed amounted to only 16,500 tons, resulting in a profit of £1,036.

In order that the company may recover the loss incurred during the strike period, and continue to make profits an adequate supply of native labour is essential, as with the present grade of ore it is necessary to work the reduction plant to its full capacity. Given favourable conditions, it may be possible to run the mine for several years. On the other hand, the margin of profit is so small that adverse or unfavourable circumstances may at any time make mining unprofitable, and so cause the closing down of operations.

Since the close of the financial year the death occurred of Mr. Charles Marx, who had been a director for many years and rendered valuable services to your company. Mr. Fritz Marx was elected by the Board to fill the vacancy caused by Mr. Marx's death.

The appointment as directors of Messrs. G. J. Joel and F. L. Marx was confirmed, and Messrs. J. Munro and J. G. Lawn, C.B.E., were re-elected.

The auditors, Messrs. F. W. Diamond and English, and Mr. A. E. Page, were reappointed.

NEW UNIFIED MAIN REEF.

LOWER COSTS AND LOWER GRADE.

At the annual meeting, held yesterday, of the New Unified Main Reef Gold Mining Co., Ltd., the report and accounts for the year ending December 31, 1921, were submitted by Mr. J. Mann, who presided. Amongst those present were Messrs. G. J. Joel, J. H. Crosby, F. L. Marx, W. M. Munro, R. L. Innes, C. Sampson, and F. Hall (secretary), and E. H. Francis (transfer secretary).

In the course of his address to the meeting Mr. Munro said:—

The quantity of ore crushed during the year amounted to 133,700 tons, being an increase of 5,200 tons over the quantity crushed in 1920. Owing to the strike which occurred in the early part of 1921, the ore mined was 1,300 tons less than during the previous year, but this deficiency was more than made up by taking a larger tonnage from surface dumps. The number of fine ounces produced amounted to 30,102 at a cost of 89s. 7d., and the price realised worked out at 105s. 8d. per ounce, leaving a working profit of £24,207 for the year.

The working costs were 1s. 11d. per ton milled lower than for the previous year, but owing to the lower grade of ore crushed, and the reduction in the price obtained for the gold won, a decrease in the working profit resulted as compared with 1920, when the working profit amounted to £41,037.

A balance amounting to £18,316 was brought forward from the previous year, and the directors declared two dividends of 5 per cent. each payable to shareholders registered on June 30 and December 31, 1921, respectively. The total sum in respect of these dividends amounted to £25,000, and a balance of £14,457 was carried forward to this year.

After the commencement of the strike in January of this year the essential services were carried out by the officials, to whom, on behalf of shareholders, the directors conveyed their appreciation and thanks for the excellent services rendered by them. The natives were employed generally in cleaning up the surface, and in removing the sorted waste rock dump covering an older dump in which payable values were expected. In this way approximately 10,000 tons were made available for milling. About February 13 the mill was restarted with rock from the surface dump, and during the quarter ended March 31, 1922, 12,700 tons were crushed; the loss for the period amounted to £10,859.

Native Labour Shortage.

The mine suffered very severely in the depletion of its native labour force, and in April the quantity of ore crushed was about 2,500 tons less than the normal tonnage. During May there was some improvement in the complement of natives, but the mine is still short of labour. The ore crushed in May amounted to 10,600 tons, resulting in a profit of £1,002.

The ore reserves are practically exhausted, and very little straightforward stoping ground remains, but there is some low grade main reef rock from reclamation to be milled, as well as a certain quantity of rock from the surface dumps.

As has been pointed out, the cost of producing an ounce of gold at your mine is above the standard price, consequently the period during which we will be able to continue mining operations profitably largely depends upon the continuance of the premium on gold, and what reduction may be effected in the working costs.

Since the close of the financial year the death occurred of Mr. Charles Marx who had been a director for many years, and rendered valuable services to your company. Mr. Fritz Marx was elected by the Board to fill the vacancy caused by Mr. Marx's death.

The report having been unanimously adopted the appointment as directors of Mr. G. J. Joel and Mr. F. L. Marx was confirmed, and Messrs. J. G. Lawn, C.B.E., and J. Munro were re-elected. Messrs. Goldby and Panchaud and F. W. Bompas were reappointed auditors.

LANGLAAGTE ESTATE.

IMPROVED RECOVERY.

Mr. J. Munro, chairman, presided at yesterday's annual meeting of the Langlaagte Estate and Gold Mining Co., Ltd., at which were present Messrs. R. L. Innes, J. H. Crosby, W. M. Munro, G. J. Joel, with F. Hall (secretary) and E. H. Francis (transfer secretary).

In submitting the report and balance sheet for the year ending December 31, 1921, to the meeting, the chairman said,:—

The quantity of ore crushed during the year amounted to 479,300 tons which was an increase of 14,000 tons over the previous year. The recovery, which averaged 6.142 dwts., showed an improvement on the previous year when the average recovery was 5.965 dwts. The gold recovered amounted to 147,197 fine ounces at a cost of 85s. 6d. per oz., as compared with 138,773 fine ozs. in 1920 at a cost of 89s. 5d. per fine oz.

The working profit for the year amounted to £149,756, which in spite of the increased tonnage and lower working costs, was £3,597 less than for the preceding year, due to a decrease in the price obtained for the gold.

Dividends of 5 per cent. and 7½ per cent, absorbing £110,812 10s. were declared to shareholders registered on June 30 and December 31, 1921, respectively, and a balance of £86,192 8s. 6d. was carried forward to this year's account as compared with £88,048 14s. 6d. brought forward from 1920.

The capital expenditure for the year on shaft sinking, machinery and plant, and mine buildings, amounted to £42,406, but against this expenditure there was a recoupment of £12,900 from the sale of township stands.

Development Work.

During the year the Hebbard, or Eastern shaft, was sunk 386 feet, to an incline depth of 3,804 feet, and the necessary work in connection with the cutting of the stations and ore bins was carried out. This shaft has still to be sunk 1,300 feet to reach the southern boundary of the property.

The main, or western shaft, was sunk

184 feet, and stopped in April at an [illegible] depth of [illegible] feet.

Compared with the previous year, the total footage developed was increased by 1,[illegible] feet, [illegible] owing to the large amount of [illegible] which had to [illegible] the footage on reef shows only a small increase. Of the footage sampled, [illegible] per cent. on Main Reef Leader and 66 per cent. on South Reef were in payable areas. The ore reserves, [illegible] estimated at the end of the year at [illegible] tons of an average value of [illegible] dwts. over a stoping width of 54 inches, are somewhat lower than at the end of 1920, the decrease being due to the fact that the ground developed near the main shaft was very much disturbed by dykes.

Loss Through the Strike.

The strike, which commenced on January 10 of this year and lasted until about the middle of March, made it impossible to carry on ordinary mining operations. The essential services were performed by the mine officials, to whom on behalf of shareholders the Board of Directors conveyed their appreciation and thanks for the excellent services rendered by them. After the date of General Smuts's appeal, a certain amount of work, both underground and at the reduction works, was done and for the quarter ending March 31, 36,806 tons were crushed. The loss for the quarter amounted to £41,741.

In spite of the wastage which took place in the native labour force in this period, development was vigorously prosecuted during the month of April, and mining operations resulted in a working profit of £12,215.

During the past month there has been a welcome improvement in the native labour force, and conditions are now approaching normal. The working profit for May amounted to £13,559.

Since the close of the year, your board, in conjunction with the Crown Mines, Limited, purchased the property known as the Langlaagte Proprietary Mine. This property consists of 109 claims, and lies between the Block B. ground and the Crown Mines. The railway line has been used as a boundary between the portions taken by ourselves and the Crown Mines, the latter company taking 55 claims south-east of the railway line, and your company taking 54 claims north-west of the line. It is proposed, immediately, to proceed with a shaft to develop this area, and simultaneously to drive into the newly acquired ground from our own levels. This area should prove a valuable asset, and materially prolong the life of the mine.

Following the adoption of the report, the appointment of Mr. Geoffrey J. Joel as a director was confirmed and Mr. J. G. Lawn, C.B.E., was re-elected.

The auditors, Messrs. C. L. Andersson & Co. and W. Fergusson, were re-elected.

◆

CONSOLIDATED LANGLAAGTE

AFFECTED BY 1921 STRIKE.

Gold Premium Produces Profit.

The chair was occupied by Mr. John Munro at the meeting yesterday of the Consolidated Langlaagte Mines, Ltd., at which were Messrs. W. M. Munro, G. J. Joel, R. L. innes, F. L. Marx, J. H. Crosby, T. G. Suter, C. Sampson, R. Heseroft, and H. la Chard. Mr. Julius Friendlander was represented by Mr. T. G. Suter. Mr. Frank Hall, representing the secretaries, and Mr. E. H. Francis, for the transfer secretaries, were also present.

In moving the adoption of the report and accounts for the year ending December 31, 1921, the chairman said:

The strike of miners which took place on the mine in the early part of the year under review adversely affected the operations of your company, as, during the month of February, the mill ran for only seven days. In consequence of the strike, the tonnage milled, which amounted to 154,000 tons, was 19,300 tons less than during the previous year.

In spite of the necessary expenditure incurred owing to our having to pay and feed the natives during the period of the strike, the working costs for the year were 2d. per ton lower than for the previous year.

The gold produced during the year amounted to 144,630 fine ounces at a cost of 82s. 1d., and the price realised was 105s. 11d. per ounce, showing a profit of 23s. 10d. per fine ounce. The working profit for the year amounted to £172,608. After adding interest, rents, and dividends received from the Witwatersrand Co-operative Smelting Works, and deducting debenture interest, debenture expenses, income tax and other items of expenditure which do not form part of the ordinary working expenses, a balance of £163,671 remained to be carried to the appropriation account. This amount, together with £81,748 brought forward from 1920, totals £245,419, which was disposed of as follows:

Dividends Declared.

Dividends of 5 and 7½ per cent. were declared in June and December respectively, absorbing the sum of £118,750. The expenditure on capital account after deducting the proceeds of certain sales during the year, amounted to £30,220, and a further sum of £25,000 was absorbed in redemption of debentures, leaving a balance of £71,449 to be carried forward. The liability under the heading of debentures at the end of 1921 was £25,000, and this amount falls to be paid on July 1 next.

Development totalled 9,595ft., which was somewhat less than the footage accomplished in 1920, but the percentage of payability was better, with the result that the ore reserves, which were recalculated at the end of the year, show a slight increase, and are estimated at 1,371,000 tons of an average value of 6.5dwt. over a stoping width of 51in.

In common with other mines on the Rand, your mine suffered very severely through the strike which occurred on January 10 last and culminated in a revolt in March. Although no damage was done to the machinery and plant, the loss for the quarter ended March 31 amounted to £32,419. The thanks of shareholders are due to the manager and his staff for carrying on the essential services of the mine during this trying and difficult period.

Native Labour Position.

Owing to the large wastage in the native labour force, which took place during the period of the strike, the mine is suffering very severely. The number of natives working underground at the end of March totalled 2,194, and at the end of April 2,079, as compared with an average of 2,932 natives working underground throughout the past year. In April we were able to make a small profit, and for the past month the profit amounted to £5,051.

In consequence of the shortage of native labour since the strike, it has been impossible to carry on shaft sinking and development, but this work will be resumed as soon as the native labour position warrants, and it is hoped that with reduced costs and improved efficiency we shall be able to maintain regular monthly profits.

Since the close of the financial year the death occurred of Mr. Charles Marx, who had been a director for many years, and rendered valuable services to your company. Mr. Fritz Marx was elected by the board to fill the vacancy caused by Mr. Marx's death.

The appointment of Mr. Fritz L. Marx as a director was confirmed, and Messrs. E. Danckwerts and J. Friedlander were re-elected directors.

Messrs. Douglas, Low and Co. and Mr. W. Fergusson were reappointed auditors for the current year.

◆

WITWATERSRAND G. M. CO.

WORKING PROFIT LESS OWING TO LOWER GRADE.

The annual meeting of shareholders of the Witwatersrand G.M. Co. was held yesterday in the board-room, Consolidated Buildings. There were present: Messrs. J. Munro (presiding), W. M. Munro, J. H. Crosby, R. L. Innes, J. Dale Lace, W. Ross, G. J. Joel, A. J. Beaton and J. J. Hardwick. In attendance: Mr. Frank Hall represented the secretaries, and Mr. E. H. Francis for the transfer secretaries.

The chairman said: I beg to submit for your approval and adoption the directors' report and audited balance sheet for the year ended December 31, 1921. The quantity of ore crushed at your mine during the year amounted to 448,300 tons, being an increase of 32,100 tons over the previous year. This increase is due to the opening up of the ground taken over from the Knights Deep, which is being worked on a royalty basis, and also to the large influx of natives in the latter part of the year. During the year 48,116 tons were recovered from the claims taken over from the Knights Deep and, although the ore is of low grade, it will prove of value in keeping the reduction works more fully supplied than would otherwise be possible.

Lower Grade.

During the year 117,734 fine ounces of gold were produced at a cost of 90s. 4d. per ounce, and sold at an average of 105s. 10d. per fine ounce, as compared with 1920, when 116,627 fine ounces were produced at a cost of 88s. 7d. per fine ounce and sold for 111s. 6d. per fine ounce. The working costs at 23s. 9d. per ton crushed were 1s. 1d. per ton lower than for the previous year, but owing to the lower grade, and the decreased price obtained for the gold, the working profit was £42,703 less than in 1920. With the cost of production standing at 90s. 4d. per ounce, it will be seen that, if the price of gold continues to fall, considerable reductions will have to take place in working costs, if the mine is to continue profitable operations. Last year the working profit was 4s. 1d. per ton, or with gold at 105s. 10d., 15s. 6d. per fine ounce.

After adding to the working profit for the year the sundry revenue, and deducting the various items which do not form part of the working costs, there remained the sum of £102,014 to be carried to the appropriation account which, together with the balance brought forward from 1920, makes a total of £306,298. From this amount dividends of 10 per cent. and 15 per cent. were declared payable to shareholders registered on June 31 and December 31 respectively, and absorbed £117,406, leaving £188,892 to be carried forward to the current year.

The Staff's Services.

It is, I think, unnecessary for me to deal at any length with the strike and revolution which occurred in the first quarter of the present year, suffice it to say that no damage was done to the company's property. The essential services was carried on by the staff, to whom on behalf of shareholders the board of directors conveyed their appreciation, and thanks for the excellent services rendered by them. During the first three months of the year 47,420 tons were crushed, resulting in a loss of £25,905. The mine suffered very severely in the depletion of its native labour force, and at the end of April there were 2.134 natives employed as compared with 3.538 at the end of December last. Consequently only 25,280 tons were crushed which, with the addition of the sundry revenue, resulted in a profit of £1,425.

A full complement of native labour is essential to the profitable working of your mine. In this respect we are now in a far inferior position to that reached at the close of 1921. However, during the past month labour has been coming in more freely, and 33.000 tons were crushed, resulting in a profit of £11.156. As very little payable ore was developed during the year, the ore reserves show a considerable depletion. A recalculation was made at the end of the year, showing 547,300 tons of an average value of 5.8 dwts over 63 inches of reef.

Since the close of the financial year the death occurred of Mr. Charles Marx, who had been a director for many years, and rendered valuable services to your company. Mr. J. H. Crosby was elected by the board to fill the vacancy caused by Mr. Marx's death.

I now beg to move the adoption of the report and accounts.

Messrs. W. Ross and S. B. Joel were re-elected directors.

Messrs. F. W. Diamond and English and Messrs. Chas. Stuart and F. E. Roberts were reappointed auditors for the current year.

NEW STATE AREAS.

New Crushing Plant.

When Production May Commence.

At the annual meeting of the New State Areas, Ltd., on Friday, Mr. J. Munro was in the chair. There were also present Sir William Dalrymple, K.B.E., Messrs. J. H. Crosby, W. M. Munro, G. J. Joel, A. Sprinz, A. Ravno, E. R. Grant, F. L. Marx, A. J. Beaton, C. K. Thomas, E. M. Hyman and R. L. Innes, Frank Hall, secretary, and E. H. Francis, transfer secretary.

In moving the adoption of the report and accounts the chairman said: I beg to submit for your approval and adoption the directors' report and audited balance-sheet for the year ended December 31, 1921.

As I mentioned last year, the work of sinking the two shafts on your mine was completed early in the year, and with the exception of the lowering of the main air and pump columns, the shafts have been fully equipped for working.

Development was started in February and carried on throughout the year on completion of the necessary work of cutting stations and bins. The footage driven, risen and sunk, amounted to 16.019 feet. Of this footage 6,854ft. were accomplished at the north shaft and 9,165ft. at the south shaft. The ground in the neighbourhood of both shafts was faulted. The development in the southern section of the mine gave good values in all directions, but that to the north-west of the north shaft was poor, although the results to the south-east were encouraging. The development accomplished proved that there are large blocks of payable ground in sight and justified the ordering of the reduction plant. I may here mention that the payable ore developed at April 30 last amounted to 482,000 tons of average value of 7.9dwt. over a stoping width of 67in. The main connecting drive was advanced from each shaft and at the end of the year there remained 1,450ft. still to be driven. It is expected that the connection between the shafts will be complete about the middle of next month. Very careful attention has been given to the ventilation of the mine and all the development ends are well ventilated by means of galvanised iron pipes of a diameter of 24in., the air being exhausted by electrically-driven fans. Everything has been done to make the conditions underground as good as possible, and very favourable opinions have been expressed on the methods employed, by the Government officials who have inspected the mine. One material result of our efforts in this direction is that permission has been given for blasting operations at any hour during the shifts

Capital Expenditure.

The capital expenditure during the year amounted to £354,800, of which £175,276 was spent on development, £68,729 on shafts and equipment, and the balance on machinery, plant and buildings, and it is anticipated that a further £750,000 will be required to be expended before we commence production. This expenditure will be principally on the reduction plant and development of the mine

When the strike commenced on January 10 last, all work on the property with the exception of pumping was stopped. The water in the mine was greater than could be dealt with and this to some extent interfered with the recommencement of development work at the conclusion of the strike. However, towards the end of April, when native labour became plentiful it was possible to carry on work at a normal rate and operations are now going steadily ahead.

The Springs Mines Experiments.

The question of the reduction plant has been the subject of most careful attention, as it has been our desire to have the advantage of the latest and best methods of gold extraction. We accordingly contributed towards the cost of the experiments which were made on the Springs Mines for the crushing and treatment of the ore by what is known as the all-sliming process, which eliminates the stamp mill. As a result of these experiments it was decided to equip the mine with a crushing and treatment plant designed on lines which are a distinct departure from current practice. The plant will have a capacity of 50,000 tons per month, and all-sliming of the ore will be effected by means of a combination of crushers and tube mills, the stamp mill and amalgamating plates being eliminated. The crusher station will be provided with a set of jaw crushers to reduce the ore to a maximum of 2¼in. cubes. The product from this will pass on to a set of horizontal disc crushers, which will further reduce the ore to a maximum of 1in. cubes; there will be thirteen tubemills which will be of larger dimensions than any hitherto installed on the Rand. Each tubemill will have a Dorr Classifier so that each will have an independent circuit. The slime treatment will follow modern practice.

There will be a considerable saving in the capital outlay. The plant is of such a nature that when the output of the mine justifies it we can increase its capacity for a comparatively small outlay.

The orders for the plant have all been placed; work in connection with the excavations is steadily proceeding, and provided we can carry on the work without any unforeseen delays, the plant should be running in the second quarter of next year.

I regret that since the close of the financial year the death occurred of Mr. Charles Marx, who had been a director since the formation of the company.

The motion for the adoption of the reports and accounts was seconded by Mr. A. J. Beaton, and on being put to the meeting was carried unanimously.

The appointment of Mr. Geoffrey J. Joel as a director was confirmed, and Messrs. J. G. Lawn, C.B.E., and J. H. Crosby were re-elected directors.

Messrs. E. Danckwerts and Co. and Messrs. Alex. Aiken and Carter were reappointed auditors for the current year.

This terminated the proceedings.

VAN RYN DEEP.

Last Year's Big Programme.

Notable Increase in Output.

At the annual meeting of the Van Ryn Deep, held on Friday, Mr. J. Munro, presiding, there were also present Messrs. J. H. Crosby, W. M. Munro, G. J. Joel, E. M. Hind, C. K. Thomas, F. Hilner, R. L. Innes, E. R. Grant, E. H. Read, W. T. Warriner, E. Rundle, J. H. Brown, I. Kanter, Sir Wm. Dalrymple, R. A. C. Kearns, H. Spafford, G. Bickle, A. B. S. Weir, W. Jackson, F. L. Marx, A. J. Beaton, E. M. Hyman, and Mrs. B. G. Colby, Mr. Frank Hall, secretary, and Mr. E. H. Francis, transfer secretary.

In moving the adoption of the report and accounts for the year ending December 31, last, the Chairman said:—

With a more plentiful supply of natives and improved facilities for handling the ore underground, we were able to crush during the year 27,850 tons more than in 1920. The working costs at 26s. 6d per ton milled show an increase of 11d. per ton over the previous year. It must be borne in mind, however, that a very large amount of sorting is done, the quantity of waste sorted out during the year amounting to 204,183 tons, or over 25 per cent. of the ore mined, as against 22.20 per cent. in the previous year. Further, a reorganisation of the transport of ore underground, together with a comprehensive ventilating scheme, both necessitated by the extension of the mine workings, were carried out during the year. In addition a large programme of repair and replacement was called for both on surface and underground. All this meant largely increased costs during the period of alteration and repair, but it is confidently hoped will in the future result in a material reduction in working costs.

Gratifying Results.

The benefits of improved ventilation, transport of ore, etc., are reflected in the returns of May this year, which show a high underground efficiency both in stoping and tramming. During the year 327,007 fine ounces of gold were produced at a cost of 49s. 7d., and sold at an average of 106s. per fine ounce, as compared with 305,825 ounces produced at a cost of 48s. 11d., and sold for 112s. per ounce in 1920.

The working profit for the year was £922.918, compared with £964.883 for the previous year, the decrease being principally due to the lower price obtained for our gold. After adding sundry revenue to the figure of £922,918, and deducting income and provincial taxes and other expenditure which did not form part of the working costs, there remained the sum of £778,677 to be carried to the appropriation account, which, with the balance of £137,676 brought forward from 1920, makes a total of £916,353. Two dividends of 30 per cent. each, absorbing the sum of £718,135 were declared during the year payable to shareholders registered at June 30 and December 31, 1921, respectively, leaving £198,218 carried forward.

The capital expenditure during the year, which amounted to £56,254 was incurred principally on electric traction underground, and on additions to the native compound.

Vigorous Development.

The development footage accomplished during the year was substantially greater than the previous year; the footage on [illegible] 1,625 feet as compared with 1,867 in 1920. The development in the western section of the mine was satisfactory, but owing to the [illegible] stoping, it was not possible to [illegible] as [illegible] as during the previous year. A [illegible] for the [illegible] is [illegible] and [illegible] in progress. The 10th level [illegible] was advanced [illegible] to expedite the development of the south east corner of the mine and the [illegible] on the eastern boundary was [illegible] a good grade ore exposed.

The minimum pay value of the ore included in the ore reserves was raised from [illegible] to 4.25dwt., and on this basis a [illegible] at the end of the year showed there were 3,317,000 tons of ore developed of an average value of 9.2dwt. over a stoping width of 73 inches, as compared with 3,326,000 tons of an average value of 9.7dwt. over a stoping width of 72 inches at the end of 1920. The reduction in the average value was due to the inclusion of ore developed in the western section of the mine, and to the slightly increased stoping width.

In order to ensure against a shortage of water in the dry season, the company contributed to the cost of a pipe line connecting certain of the Far East Rand mines with the Rand Mines Company's water system, and already the company has materially benefited from this scheme.

In Time of Stress.

Turning now to the current year, as you know the strike commenced on January 10, and after the withdrawal of the men from the essential services this work was carried on by the officials, the natives, with the exception of pump boys, being employed on the surface under the supervision of the officials. On February 13 milling operations were commenced, and underground work resumed and continued until the termination of the strike, the work being entirely undertaken by officials. On behalf of the shareholders the board of directors conveyed their appreciation and thanks for the excellent services performed by them.

The mine being in the centre of the storm area, the officials were from time to time subjected to interference. It is much regretted that some were waylaid and ill-treated and in consequence detained in hospital. One of the officials, Mr. B[illegible], M.C., who was serving with the Government forces, was killed, and I take this opportunity of expressing our sympathy with his relatives.

Natives and Tonnage.

During the first quarter of the year 45,210 tons were milled, and the operations for this period showed a working profit of £1,019. In April, 36,500 tons were crushed resulting in a profit of £35,027, but owing to the depletion in the native labour force it was possible to do only a very small amount of development. During the past month, however, the natives have been coming in freely, and the mine is now working on a normal scale; 54,000 tons were crushed, showing a profit of £62,490. Development is being pushed ahead, and the mine is in a very sound and satisfactory position.

At our last annual meeting I informed you that the gold mining companies of this group had deducted the Transvaal provincial gold profits tax from the amount of income taxable under the Income Tax Act of the Union, and that the special income tax court had ruled against the companies in reference to this deduction. The matter had been taken up by the Transvaal Chamber of Mines as a test case for the industry, and decided to appeal to the Supreme Court, but the appeal failed, judgment being given against the companies in October last.

Direct Taxation.

Whilst on this matter of the provincial gold profits tax, which, as you are aware, was levied by the Provincial Government of the Transvaal, I should like to take this opportunity of mentioning that the Union Parliament, under the Financial Relations Act Amendment Act No. 5, of 1921, has taken away from the Provincial Governments the power to impose direct taxation in respect of profits derived from mining operations.

Since the close of the financial year the death occurred of Mr. Charles Marx, who had been a director for many years, and rendered valuable services to your company. Mr. J. Munro was appointed by your board to fill the vacancy so caused.

Following the chairman's speech, Mrs. Colby expressed regret at hearing that one of the company's officials had been killed during the disturbances and another had been injured. She hoped something was being done in the way of compensation. The chairman replied that compensation was being awarded and thanked Mrs. Colby for her remarks, which, he was sure, would be appreciated by those concerned.

Mr. H. Spafford commented on the bonus for increased efficiency and lower working costs, and said such results were obtained at the expense of the working man. Why did not directors begin at the top and reduce overhead charges and their own fees and not only the workman's wages? He wanted to know the cost per meeting of the directors' fees.

The chairman stated that directors' fees were fixed by the company's articles of association, and, further, that the work of the board could not be measured by the number of directors' meetings attended, and that the board put in a great deal more time on the company's affairs than was represented by attendances at meetings.

Sir William Dalrymple said he would like to remind Mr. Spafford that the directors did not draw 60 per cent. increases on their fees by way of cost of living allowance or otherwise, nor did overhead charges carry similar increases which should now come off.

The chairman, replying further to Mr. Spafford, said that the increased cost of living allowance had been taken off the salaries of all mine managers.

Mr. Edgar Hyman disagreed with the criticism of the previous speaker, and could not see what the attending of a board meeting yesterday or the week before had to do with the question. The excellent position the company was in and the results that had been obtained reflected to the credit of the directors, and he considered they should receive the full support of the shareholders.

Mr. E. R. Grant agreed with Mr. Hyman's remarks, and moved a vote of thanks to the board for the successful manner in which they had conducted the affairs of the company. In regard to the recent anxious times, he thought shareholders would cordially endorse the appreciation of the services of the employes during the strike period, as voiced by Mrs. Colby.

The appointment of Mr. Geoffrey J. Joel, as a director, was confirmed, and Mr. H. A. Rogers and Sir William Dalrymple, K.B.E., were re-elected directors.

Messrs. Alexander Aiken and W. Fergusson were reappointed auditors for the current year.

GOVERNMENT AREAS.

Mr. Munro's Review.

Last Year's Profits and Dividends.

Mr. J. Munro presided at the annual meeting on Friday of the Government Gold Mining Areas (Modderfontein) Consolidated, Limited. There were also present Sir William Dalrymple, Messrs. J. H. Crosby, R. L. Innes, C. K. Thomas, G. Sonn, G. Sonn (representing Mr. G. Imroth), G. J. Joel, E. M. Hyman, F. Hilner, C. Sampson, D. Christopherson, F. L. Marx, A. Sprinz, W. M. Munro, J. E. S. Billing, P. G. Heywood, D. Wilkinson, W. Weir, A. B. S. Weir, G. Bickle, D. Amos, T. Stanley, I. M. Starfield, I. Kantor, A. J. Beaton, G. Griffiths, A. Ravno, J. E. Hamilton, F. W. Baxter, and Mrs. J. M. Weir. Mr. Frank Hall, secretary, and Mr. E. H. Francis, transfer secretary.

In moving the adoption of the report and accounts, the Chairman said: The directors' report and audited accounts for the year ended December 31, 1921, which have been in the possession of shareholders for some time, are now submitted for your approval and adoption.

It is a pleasure to again congratulate the shareholders on the continued success and improved position of the company. Last year the quantity of ore crushed was 1,625,500 tons, an increase of 110,500 tons over the previous year, and there was an increase of 62,579 ounces in the gold obtained. In 1920 a record profit of £1,708,164 was obtained, but the profit for 1921 exceeded this figure by £54,326, which, taking into consideration the fall in the price of gold, is very gratifying.

Reduced Working Costs.

The working costs were 7d. per ton milled lower than for the previous year, the decrease being due partly to increased tonnage milled and partly to the reduction in white wages which came into effect in the latter part of the year. It was expected that a reduction in the cost per ton of stores would be effected, but when it is borne in mind that the principal items of stores used on the mines are coal, timber, and explosives, and that on these articles there are still very heavy railway rates, it will be seen that until we get some relief in this direction there will be little appreciable reduction in the cost of stores.

The average cost of producing a fine ounce of gold during the year was 52s. 10d., and the average price obtained was 105s. 9d., leaving a profit of 52s. 11d. per fine ounce, or a total working profit of £1,762,490 for the year.

After adding to the working profit of £1,762,490, the sundry revenue amounting to £40,997, and deducting £31,285 for Provincial profits tax, income tax, donations, etc., a balance of £1,772,202 is left to be carried to the appropriation account. To this amount there falls to be added the balance brought forward from the previous year, making in all £2,239,738, which is accounted for as follows: Dividends of 25 per cent. and 30 per cent. respectively were declared payable to shareholders registered on June 30 and December 31, 1921, absorbing £770,000. The amount payable to the Government in respect of their share of profits for the year, with a small adjustment on account of previous years, was £896,211. An amount representing the balance of capital expenditure in excess of the working capital provided, transferred from appropriation account, £413,003. Leaving a balance to be carried forward to this year of £160,524, making a total of £2,239,738.

Taxation and Dividends.

The total amount paid to the Government since the commencement of the lease is approximately £3,054,845, while Shareholders have received in dividends for the same period the sum of £2,555,000.

The net capital expenditure for the year amounted to £74,999, and was expended principally on underground equipment, additions to the compounds and offices, and on the new circular shaft.

The development footage accomplished during the year totalled 39,072 feet, an increase of 877 feet on the previous year but the footage on reef was less, due chiefly to the large amount of work done in cross cutting and main haulages. The values obtained throughout the mine during the year have been highly satisfactory, and the ore reserves have been maintained. At the end of the year, after the recalculation, the reserve stood at 10,232,000 tons, of an average value of 8.5dwt. over a stoping width of 77 inches. This is a decrease of 59,000 tons on the previous year, but there is a slight increase in the average value. The aim during the year has not been so much to open up new areas as to block out and make readily available for stoping the large blocks of ground already exposed.

Sinking the Circular Shaft.

In July last a fan having a capacity of 250,000 cubic feet per minute was installed at the bottom of No. 4 shaft in order to improve the mine ventilation, but in order to meet the requirements of the continually increasing area of the mine it was decided to proceed at once with sinking the circular shaft to which reference was made at the last annual meeting. Towards the end of the year a start was made, and the shaft, which will have an internal diameter of 22ft., is being sunk at a point central to the four existing shafts. The shaft will be used for ventilating purposes only, and will have a depth of approximately 3,500ft. It is estimated to cost £125,000, and while this is a heavy expenditure for the company to face, without such a shaft the ventilation would, as the area of the workings increased, become more and more difficult, but once it is sunk and in commission adequate underground ventilation will be assured during the life of the mine.

On January 10 this year all the daily paid employes, with the exception of a few who were allowed to carry on essential services, went out on strike, but on the 13th these men were also called out by the strike committee, and this work thereafter was carried on by the officials. On February 13 after General Smuts's appeal, a few men returned to work and operations were carried on on a limited scale, but on March 9 the strike developed into a revolution and all work was stopped for a few days; a resumption, however, was made on March 15.

In Spite of the Upheaval.

It is gratifying that in spite of the upheaval a profit of £52,911 was made for the quarter ended March 31, and great credit is due to the officials who carried on the work at the mine during a period of great difficulty and danger.

During April of this year mining was carried on at Nos. 1, 3 and 4 shafts, and as the native labour position improved work was restarted in May at No. 2 shaft. In April 105,500 tons were crushed, resulting in a profit of £118,048. Your mine has always been a popular one with natives, and during the past month they have been coming in very freely in consequence of which the operations for the month of May showed that 139,000 tons were crushed, resulting in a profit of £160,328.

Since the close of the financial year the death occurred of Mr. Charles Marx, who had been a director since its formation and rendered valuable services to your company. Mr. J. H. Crosby was elected by the board to fill the vacancy caused by Mr. Marx's death.

I now beg to move the adoption of the report and accounts.

Enemy Shares.

Replying to Mr. I. M. Starfield, the Chairman stated that the company had not bought the enemy shares in the Custodian's hands. The expense of distributing them amongst shareholders, advertising, etc., did not justify such action, seeing that a pro rata distribution would have been at the rate of perhaps one in 200, the number of such shares being comparatively very small.

Asked by Mr. F. W. Baxter if he could announce the rate of dividend for the current half-year, the Chairman said the figures were being gone into. It was hoped to declare the dividend about the middle of June.

Mr. Edgar Hyman said the large credit balance carried forward from 1921 justified the declaring of a dividend not necessarily based upon the profits actually earned for the six months. Many shareholders bought their shares as an investment and not as a speculation, and for this reason the dividend, he hoped, would be as big as it could be made.

The directors' report and accounts were then passed.

The appointment as directors of Messrs. Geoffrey J. Joel, J. G. Lawn, C.B.E., and J. H. Crosby was confirmed, and Messrs. G. Imroth and J. H. Crosby were re-elected directors.

Messrs. Douglas, Low and Co. and Mr. E. Danckwerts were reappointed auditors for the current year.

The meeting then terminated.

WAKEFIELD'S
HIGH-CLASS LUBRICANTS.

The Economy of Paying a Higher Price.

Were we to assert that we could get a good satisfactory engineering job at a low price or that a cheap machine is as good and will do equally good work and be as economical as a first class one,
What would you say or think?

Why not be your own Judge?

Put WAKEFIELD'S LUBRICATING OIL to the test. If a gallon goes further, gives better working results and reduces danger of breakdown, your very pride in your work will decide the matter apart from all selling talk.

TRUE CHEAPNESS IS DECIDED BY THE AMOUNT AND QUALITY OF THE WORK DONE.

Sole Agent for South Africa: WILLIAM CAMPBELL P.O. Box 1814, JOHANNESBURG

Sales Representatives:
MARTYN & BELL,

2, Allkin House,
corner Marshall and Harrison Sts.,
Box 3181 JOHANNESBURG. 'Phone 1913

343 West Street,
DURBAN.
'Phone 1368 P.O. Box 206

GENERAL MINING GROUP.

AURORA WEST UNITED GOLD MINING CO.

At the annual general meeting of the Aurora West United Gold Mining Co., Ltd., Mr. [illegible] said: In view of the fact that working losses were made for the first five months of the year under review, the bulk of which was incurred due to the strike of underground workmen which took place at that time, the results for the whole year show a working profit, including sundry revenue, of £8,210 as compared with £5,667 for 1920. This result was achieved on a smaller tonnage than that treated in the previous year, the comparative figures being 131,840 tons for 1920 and 122,410 tons for 1921. The decrease mentioned is a direct outcome of the policy, which was inaugurated in April, 1920, of reducing the tonnage in order that a higher grade of ore could be milled. That this policy has justified itself is evident from the results above quoted, the extra profit being earned almost entirely by reason of the increased grade of ore milled, the difference in favour of the year 1921 being .27dwt. on the basis of the actual gold recovered. Had the price of gold been maintained for the past year at the average of 1920, the profit would have shown a still further increase. As a matter of fact, however, the average price for 1921 was approximately 4s. per fine ounce lower than the average for the preceding year. On the other hand it must not be forgotten that the average premium for 1921 averaged nearly 20s. per fine ounce, and that without its aid the profit as declared would have been impossible, and in fact a loss of a much greater amount would have been the result of the operations for the year. Despite the smaller tonnage dealt with, working costs show a slight fall per ton milled, mainly by reason of a decrease in the cost of living allowance paid to employes and a decline in the price of certain stores, both of which took effect in the latter months of the year.

After providing for interest on the loan, an amount of £6,237 was available for reduction of the company's debt to the General Mining and Finance Corporation, which at the end of the year stood at £11,129.

You will observe from your manager's report that the ore reserves at 136,700 tons, of an average value of 6.9dwt., show a much more favourable position than was disclosed at the end of 1920, principally owing to the fact that the development in the bottom section of the mine continued to open out ore of an excellent grade.

In commenting on the results for the first five months of the present year, we are immediately confronted with the disastrous results to your company of the strike of mine workmen which took place early in January and lasted until well on in March. During that quarter only 8,409 tons were milled, with the result that the operations showed a loss of £13,017. This made it necessary for your company to obtain further financial assistance from the General Mining and Finance Corporation, Ltd.

The natives on the mine kept quiet and peaceable during the whole period of the strike, but their numbers were reduced from 1,094 at the end of December to 795 on March 31 last. Owing to this reduction, the operations for April gave a tonnage milled of 7,160 only, but even on the reduced tonnage it was possible, through further reorganisation after the strike, to declare a profit of £528. At the end of May the native labour force had increased to 1,096, enabling the mine to crush for that month 9,400 tons at a profit of £1,543.

I have to record with great pleasure the admirable conduct of the officials on the mine who remained during the strike loyal to your interests, and preserved your property intact in the face of great difficulty and danger.

Taking into consideration the possibility of reduced costs which, as a result of post-strike reorganisation, it seems reasonable to assume, and the more favourable developments in the lower levels of your mine, the outlook for your company seems more hopeful than it has been for some years past, always provided that a reasonable supply of native labour can be maintained.

In conclusion, it gives me great pleasure to again acknowledge the valuable services of your technical adviser (Mr. Erroll Hay), of your manager (Mr. Rose-Innes), and also of the officials on the mine, who have so conclusively proved that they have the interests of the company at heart.

* * *

CINDERELLA CONSOLIDATED.

Mr. French presided at the annual general meeting of the Cinderella Consolidated Gold Mines, Ltd. He said: The accounts before you show that your company still depends for its revenue almost entirely on rents received for the mine dwelling houses and buildings, and that unfortunately these are not sufficient to cover the necessary expenditure on licences, Mynpacht dues, and the maintenance of your property.

The net difference between expenditure and revenue, amounting to £6,069, represents the actual outgoings for the year under review, being a drop of £563 on the cost for the previous year. This decrease is attributable to a small increase in the rent revenue and a reduction in the cost of maintenance, plus a rebate of £300 in respect of European agencies, the expenditure on which during the war was estimated, and is now found to be less than was previously anticipated.

Machinery and plant sold during the year totalled £6,394, so that the cash position is slightly better, the cash on hand at the end of the year being £16,888.

On June 20, 1921, a meeting of debenture holders was held in London, when it was agreed that the redemption of debentures, and payment of interest therein, should be deferred for a further period. The date now fixed for the resumption of interest payments is December 1, 1924, and redemption of debentures will not be resumed before December 1, 1925.

You will remember that your Chairman at the last annual meeting referred to the majority report of a committee of engineers appointed by the Government, in which it was recommended that working arrangements should be made between the East Rand Proprietary Mines and your company to run the two properties as a joint concern. Although we were, as your Chairman informed you, willing to consider any reasonable proposals by the East Rand Proprietary Mines in this connection, no suggestions have been put forth by them, and the matter therefore remains in statu quo.

Although one result of the recent upheaval is a much better outlook from the point of view of labour conditions, and there is also an undoubted fall in the price of most of the stores necessary for mining, the time is not yet ripe for formulating a definite scheme for the resumption of active operations on your mine. The position is, however, being carefully watched, and your directors are not without hope that the results of the operations on the working mines of the Rand during the remainder of the current year will be of such a nature that capital will be attracted to gold mining in South Africa, in which case the undoubted attractions which are held out by your large property cannot fail to make themselves felt. Should such conditions materialise, it is hoped that your company may in the not too distant future be placed once more on the active list.

* * *

MEYER AND CHARLTON.

Speaking at the annual meeting of the Meyer and Charlton Gold Mining Co., Ltd., to-day, Mr. Arthur French said: The reports and accounts for the past year show that a working profit was earned amounting to £293,400. This represents a decrease of £51,692 as compared with the operations of the previous year, and is attributable, in the first place, to the lower prices for gold ruling during 1921, and, secondly, to the somewhat lower grade of ore milled.

This latter factor is due to the increased proportion of ore obtained from reclamation work, which rose to 78,398 tons (as compared with 54,555 tons for 1920), and represents 46.8 per cent. of the total ore hoisted. I may once more explain that although this reclamation ore is below the average value of the ore reserves, and, therefore, brings down the general value of the ore milled, it is distinctly payable, and, therefore, contributes very materially to the profits, whilst conserving to a corresponding extent high grade main reef leader, which would otherwise have to be mined in order to maintain normal milling operations.

The Year's Dividend.

Sundry revenue, amounting to £19,531, brought up the gross profit for the year to £312,931, and, with the addition of £161,670 of unappropriated profit brought forward from 1920, there was a total available profit of £474,600. Of this amount £77,849 is absorbed by Government taxes, and the Union Government's percentage of net produce in respect of its undermining rights, £2,885, was appropriated for capital expenditure, £1,500 for depreciation on investments, and £200,000 has been distributed in dividends representing a return of 100 per cent. for the year on the issued capital of the company, leaving a balance of unappropriated profit carried forward to the current year of £192,365. This dividend represents a decrease of £40,000, or 20 per cent., as compared with the previous year, but, as I have already pointed out, the working profits were less by £51,963 than for 1920; moreover, at the time of the declaration of the final dividend in December last, the industrial position looked very grave indeed, and, therefore, we deemed it advisable to conserve our financial resources in the event of the critical situation developing, as, unfortunately, it subsequently did, into a prolonged struggle.

The ore reserves at the close of the year were 395,887 tons of an average value of 13.77dwts. over a stoping width of 56.3 inches. This represents a decrease of 54,163 tons, as compared with the position at the end of the previous year, but, as the ore drawn from stope faces (i.e., ore reserves) for last year was only 83,505 tons, you will see that the existing reserves represent a substantial supply, especially if, as we have every reason to hope, we are able to continue to supplement it by practically an equivalent tonnage from reclamation work.

Effect of the Strike.

Dealing with the operations of the company since the date of the balance sheet, I regret to say that the returns show a very big fall in production. This is, of course, due to the general strike called by the Federation of Trades, as a consequence of which all our surface and underground white workmen ceased work on January 10 last. The strike lasted until March 18, when the men offered themselves for work. In the meantime the native labour force had been seriously depleted, and it followed that we could only resume operations on a restricted scale. With the loyal assistance of the officials and members of your staff it was possible to effect a very much diminished scale of operations during the strike, with the result that for the three months January to March a small working profit of £6,253 was earned. For April the profit was £17,273, and the return for last month (May) gave a working profit of £17,209. We estimate the profit for this month at £18,000, which would bring the gross profit for the current half year to approximately £58,700.

From this must be deducted the Government's share of profits and the other Government taxes, amounting roughly to £17,200, leaving only about £41,500 available as distributable profit. We have, however, decided to declare the usual half-yearly dividend of 50 per cent., equivalent to £100,000, and to draw upon the company's surplus funds for the shortfall of profits. I think this distribution will demonstrate the advisability and wisdom of building up substantial reserve funds out of surplus profits during good years to provide for such contingencies as have actually materialised during the last few months, especially when, as in our case, it has been possible to effect that position while maintaining the rate of dividends paid to shareholders during such years.

It remains for me to express our appreciation of the services rendered to your company by your technical adviser (Mr. Erroll Hay) and your manager at the mine (Mr. H. Johnston). On this occasion, however, I want to ask you to record a special vote of thanks to the whole of the officials and staff on the mine, who at great personal risk and danger carried out not only their ordinary work, but, in addition, other strenuous and arduous services wherever and whenever called upon to do so, and most loyally continued, in spite of threats, their valuable efforts in the interests of your company.

The report and accounts were adopted.

Before proceeding with the business of the meeting, Mr. French extended to the manager (Mr. H. Johnston) their very deep sympathy in the great loss he had recently suffered by the death of his wife.

NEW GOCH.

TYPICAL LOW GRADE PROPOSITION.

Kept Alive for Employes and Community.

Presiding at the annual meeting of the New Goch Gold Mine, Ltd., held yesterday, Mr. Arthur French in moving the adoption of the report and balance sheet said :—

There is little for me to add to the report of your board on the operations of the company for the past year. The mine, unfortunately, has proved for some years past to be a typical low grade proposition, which has been kept alive through constant struggles apparently for the sole benefit of the employes and the community. I do not suggest that this has been our object—we are not so altruistic as that.

But the fact remains that since December, 1917, when our last dividend of 2½ per cent. was declared, we have produced gold and other revenue to the total amount of £839,912, as against which our expenditure has been £843,930 (including £795,753 in working costs, and £11,678 for miners' phthisis compensation).

In other words, notwithstanding the appreciable amount of gold won, we have actually worked for the last four years for a net loss of something over £4,000. And even this most unsatisfactory result, from the point of view of shareholders, has only been rendered possible by the drastic retrenchment scheme which was brought into effect in May, 1920, but for which the mine would have had to be closed down two years ago, or, alternatively, have continued working with the certainty of incurring heavy monthly losses during that period.

Saved by Economy.

By means of exercising every possible economy we were able to maintain operations during the past financial year on a slightly improved basis, inasmuch as a working profit of £10,353 was earned, which, with the addition of sundry revenue, was increased to a net profit of £14,233.

On the other hand, in the early part of January of this year a general strike was declared by the Federation of Trades which affected all our white employes (with the exception of officials), and the very restricted scale of operations which it was possible to carry on during the strike period—which lasted until March 17—resulted in a working loss of £15,285 for the three months January to March.

I may say that from time to time in the course of the strike we seriously considered the advisability of closing down the mine permanently, but in view of the possibility of more settled industrial circumstances and more economical working conditions resulting from the prolonged struggle, we decided to carry on.

As far as we can now judge, it would appear that there is a reasonable prospect of continuing operations on a profitable basis, and this is borne out to some extent by the working profit of £665 earned for April and £903 for last month (May), more especially in view of the fact that we were short of native labour during most part of the two months in question.

In giving expression to our appreciation of the services rendered by your technical adviser (Mr. Erroll Hay), and your manager (Mr. Robert Parker), I think we will all agree in also including the officials and staff on the mine, who so loyally carried on their work during the recent strike, when their services were so vital to the interests of your company, and were so willingly rendered in the face of great personal danger and anxiety. Our thanks are very specially due to them all on this occasion.

ROODEPOORT UNITED.

PROFIT CHANGED TO LOSS.

Further Increase of Big Debt.

In moving the adoption of the report and balance sheet at the annual meeting yesterday of the Roodepoort United Main Reef Gold Mining Co., Ltd., Mr. Arthur French, who presided, said :—

In view of the warnings conveyed in the speeches of your chairman at the two previous annual meetings, the unsatisfactory results of operations on the mine for the past year will have come as no surprise to you. These results were, of course, emphasised by the continued high scale of working costs and a considerable fall in the price of gold during the year; this combination of adverse circumstances proved fatal to a mine which has been struggling for so many years in an heroic endeavour to make revenue balance expenditure with varying but, on the whole, disappointing effect.

The year under review shows a working loss of £13,469, as compared with a working profit of £4,093 for the previous year. After deducting sundry revenue and adding interest on the loan from the General Mining and Finance Corporation, Ltd., the total deficit for the year amounts to £37,747. As a consequence, after allowing for the proceeds of certain plant and buildings, which were of no further use to your company and were therefore sold, the debt to the General Mining and Finance Corporation, Ltd., was increased to the extent of £19,954, and stood at £385,736 at the close of the year.

Disappointing Development.

In October last the position became so serious, owing to the disappointing results of development, that your directors decided to cease further activity in this direction, and to confine all work to mining from the blocks already developed and to sweeping out the stopes, with the view of gradually working up from the lower levels, and at the same time withdrawing all the valuable underground machinery and plant, preparatory to closing down the mine.

This entailed a further reduction in the white and native labour employed, and it was hoped that, as well as paying for the reclamation of the underground machinery and plant, small profits could be earned, or at least revenue could be made to balance expenditure on the reduced scale of working while this programme was being carried out.

During November and December this proved to be the case, profits of £602 and £478 respectively being earned for the two months in question.

The Strike Losses.

On January 10 of this year all of the daily paid men went on strike. I need not go into any details regarding the protracted negotiations with the unions which culminated in the disastrous upheaval, which is now fortunately a thing of the past. The financial results to your company were most unfortunate, as, instead of being able to carry out the programme outlined above, we were compelled to keep on our officials as well as the bulk of our natives on full pay.

Attempts were made to work the mine by the aid of the officials and natives, but owing to the methods of intimidation which were practised by the strikers these were of little benefit. As a result of the strike the loss for the January-March quarter amounted to £15,200, while in April and May losses of £986 and £927, respectively, have been incurred.

The losses in the last two months are, however, more than set off by the value of the material which is being recovered from the mine, and we therefore propose to continue operations on the present basis until all the remaining material has been collected from the underground workings. At the present rate of progress this should be accomplished by the end of July next.

It is with great regret that your directors have at last been forced to the decision that it is impossible to continue operations under present conditions, and the only course now open is for the company to go into liquidation and realise its assets to the best possible advantage.

It gives me great pleasure to again acknowledge the valuable services of your Technical Adviser (Mr. Errol Hay), and your Manager at the mine (Mr. C. S. Maclean), who have chiefly guided the affairs of your company through a particularly trying period. I also wish to acknowledge the valuable services of the mine officials, the great majority of whom stuck to your company loyally through a time of great difficulty and danger. I can only regret that their efforts have not been rewarded with the material success which they deserved.

WEST RAND CONSOLIDATED.

WHAT THE REDUCED PREMIUM MEANS.

Work That Will Affect the Future.

In addressing the shareholders at the annual meeting of the West Rand Consolidated Mines, Ltd., held yesterday, Mr. Arthur French, who presided, said in the course of his speech:

A comparison of the accounts for the past financial year with those for the previous year shows that working expenditure has continued at practically the same high level, and that the yield per ton milled recorded [illegible] a small increase. As a matter of fact, however, the recovery in actual gold was higher than for the previous year, but the price realised was less by an average of 3s. 2d. per ounce for 1921 as compared with 1920. The significance of this drop of 3s. 2d. in the price of gold can be emphasised by taking it over the 389,700 tons milled, which gives a figure of over £60,000 of additional revenue that would have accrued to your company had the realisable value of gold remained the same as for the previous year.

The gross profit for the year amounted to £51,844, as compared with £70,187 for the previou twelve months, the short fall being of course mainly attributable to the lower price realised for gold as just mentioned. After providing for interest on debentures, Governments taxes, ets., a net profit remained of £29,912, but this was more than counterbalanced by the capital expenditure shown in the balance sheet of £34,303, mostly in respect of additional machinery and plant installed during the year. Consequently the balance at credit of appropriation account at December 31 last was £59,563, as compared with £63,954 at the close of the previous year, and is represented by the surplus of cash and other liquid assets over the current liabilities of the company.

The ore reserves were estimated at 1,169,695 tons of fully developed ore of an average value of 6.7dwt. over a stoping width of 48in. These figures reflect an increase in value of .2dwt., and a decrease in quantity of approximately 35,000 tons, as compared with the position at the end of 1920, both factors being due mainly to the necessity for raising the pay limit by reason of the falling price of gold.

Opening Up Ore.

It would appear, at first sight, that we have only just about held our own during the year, in spite of having produced gold to the value of over £585,000. On the other hand, some useful work has been carried out which we hope will have far-reaching effects in the near future. In the first place, the new pumping plant has for the most part been installed, and this will enable us to resume the sinking of the East Shaft, with the object of opening up the ground below the 16th level, and of connecting up with the comparatively large area of partially developed ore in the old Botha Deep workings. Then, too, a considerable amount of prospecting and preliminary development work has been carried out on the Battery Reef from the Rand, Rand A, and Flora shafts which should result in opening considerable blocks of ore within a comparatively short space of time.

Although the values disclosed by the development work on the Battery Reef vary between stretches of low-grade and areas of highly payable ore, the results on the whole have been very satisfactory. It is encouraging to find that in some sections where the upper levels have indicated a low-grade zone, subsequent development in lower levels has disclosed high-grade ore. As an instance of this, I may mention a recent occurrence. If you refer to the manager's report for the past year, you will notice that he remarks on the intersection of an area of low grade reef in the 6th and 7th west drives south of the transverse dyke. During the past few weeks, the 9th level south has intersected the reef south of the transverse dyke i.e., in the same section as the 6th and 7th levels south, and has met a highly payable body of ore, the average for the 45ft. so far driven being 19.7dwt. over 12in.

Future Policy.

A matter which, I think, naturally presents itself at this juncture is some indication of the future policy of the company. Are we to be content with the procedure of the last few years, of developing and mining valuable ore for the sake of making a working profit of a few thousand pounds per month—hardly sufficient to cover the current capital expenditure? Or is there any possibility of so expanding development and mining operations as to justify the enlargement of the reduction works to a capacity more in accordance with the huge mining area held by the company?

These are questions which we have had before us from time to time, but with the high level of working costs ruling in recent years, the uncertainty attaching to the premium on gold, and the ever-present possibility of industrial troubles, it was hopeless seriously to contemplate the provision of the very large amount of additional capital required.

Now, however, that reasonable reorganisation on the mine has been rendered possible, and that, with the falling price for stores and the elimination of the cost of living allowances, there is a possibility of an appreciable reduction in working costs, the outlook for attracting capital has undoubtedly improved.

Need for Settled Conditions.

In fact, I have no hesitation in saying that if we can look for settled labour conditions for a period of years, we shall make very strenuous efforts in the near future to either reconstruct or refinance the company in such a manner as to provide the requisite moneys—if not for the whole scheme of expansion, at all events for the considerably increased scope of development which is so vital to the future prosperity of this concern.

The effect on working costs and profits of appreciably increasing the tonnage milled would undoubtedly be very marked. There are certain standing charges, such as licences on our huge area of over 2,000 claims, the heavy cost of pumping operations, and of the surface transport arrangements, which at present have to be spread over a comparatively small tonnage. If the treatment capacity were increased to approximately 60,000 tons monthly, these standing charges would remain constant, but the cost per ton milled would show a very considerable decrease. And in this and other directions the effect would be a marked drop in working costs. Now let us consider what this would mean. Assume that we could bring up the tonnage milled to 60,000 tons, and that we were able to reduce working costs to say 17s. per ton. With gold at the normal value of 84s. net the pay limit of our ore reserves would be 4.8dwt. per ton, as compared with 5.9dwt. adopted in calculating the reserves at the close of last year.

Waiting to be Milled.

It will interest you to learn that the amount of ore now standing in the mine (mostly fully developed, but not included in our present ore reserves) of a value between 4.8 and 5.9dwt. is over 730,000 tons, most of which, being fully developed, would automatically come into our reserves directly the working costs dropped to the neighbourhood of 17s. per ton. In other words, the present ore reserves would at once increase to something like 1,750,000 tons. But there is a further aspect. With a pay limit of 4.8dwt. the percentage of payable ore accruing from current and future development operations would naturally also show up at an appreciably higher figure than under the existing factor of 5.9dwts. I have only dealt so far with the influence of low working costs on building up a very substantial ore reserve. You can easily figure out for yourselves the possible working profits if the monthly output were increased to 60,000 tons, even if the margin proved to be only a few shillings per ton.

Possible Life of Fifty Years.

That is a position which might quite conceivably be attained in the course of a few years if we can work under economic and efficient conditions, and if we can provide the necessary funds in the first place for a largely increased scope of development operations, and subsequently for the material increase of the reduction plant which would be thereby justified.

It is obviously a desirable objective for shareholders, but is it not equally desirable from the point of view of white labour? Surely it is much more in the interests of labour that a mine such as ours, with a possible life of over 50 years, should be worked under such conditions as to allow of its expansion to a big and prosperous proposition, with additional scope for employment at every stage of its advancement, rather than that it should be worked on the restricted and uneconomical basis at present prevailing. And this is only one of the many cases on these fields where a lower standard of working costs and more efficient work would bring into the category of payable ore hundreds of thousands, or even millions, of tons of rock which would in turn allow of increased outputs and automatically the employment of a large additional number of white workers, otherwise possibly unemployable by the industry.

During the Strike.

Before concluding my review, I must refer for a few moments to the operations on the mine since the date of the balance-sheet. As you are aware, a general strike of all our white workmen took place on January 10, and continued until March 18. Nearly all of our officials and members of the staff remained loyal to the company, and carried out essential services on the property during the period of the strike. Normal mining operations were, however, almost entirely suspended, with the consequence that only a very restricted amount of ore could be treated, and the operations for the three months January to March resulted in a working loss of £39,236. For April a working profit of £5,246 was earned, and in May a profit of £3,383. The results for the latter month were affected by a big fall of rock at the seventh level in the Rand shaft, which, unfortunately, in addition, caused a loss of the lives of 12 natives.

I have much pleasure in expressing our appreciation of the services rendered by your technical adviser (Mr. Errol Hay) and the manager at the mine (Mr. G. D. Stephen). I also desire to record our thanks to the officials and members of the staff of the mine who so loyally stuck to their posts and carried out arduous duties in spite of intimidation and in face of great personal risk. I much regret that one of those officials (Mr. Hammond) was brutally mishandled by strikers or their sympathisers in attempting to get to his work, but I am glad to say that he has since quite recovered.

NEW STEYN ESTATES GOLD MINE, LTD.

In presiding at the New Steyn Estate Gold Mines, Ltd., annual general meeting Mr. French said: You will notice from the accounts that the expenditure for the past year, consisting as usual mainly of licences and mynpacht dues, amounted to £4,232. Against this, your company received from interest, owners share of licences, and rents, £4,095, leaving a deficit for the year of £138, which has been deducted from the credit balance of appropriation account brought forward from the previous year. The balance of unappropriated profits now stands at £48,497, and is more than represented by the cash assets which, after deducting liabilities to sundry creditors, amounted at the end of the year to £50,450.

Your large mining area remains intact, but the fact that nearly all the mines in this district have either ceased operations or are about to do so on account of their being unpayable propositions under present conditions renders the task of raising the large working capital necessary to convert your dormant property into an active producer extremely difficult, and certainly quite impossible until it can be demonstrated that mines can be worked at a much lower scale of expenditure than that which obtains at present.

SACKE ESTATES AND MINING CO., LTD.

Shares and Their Prices.

At the annual general meeting of the Estates and Mining Co., Ltd., Mr. French, who presided, said: The expenditure for the past year shows a small decrease, mainly on the cost of European agencies, which has been cut down to the lowest possible point. Revenue shows a slight increase, owing to a greater amount of interest having been earned on your investment. The result was a credit balance of £2,033, but this, unfortunately was insufficient to provide for a further heavy depreciation in your investments, amounting to £5,083, which, following our usual practice, was written off, in order that these assets should be shown in the balance sheet at or under Stock Exchange closing prices at the end of the year under review. The effect of the realised profit for the year, exclusive of depreciation, is that the cash in hand has been increased from £47,874 to £49,151, while sundry creditors have been reduced from £824 to £75.

The other assets of your company remain unchanged, the investments consisting of shares and debentures in dormant or non-dividend paying mines, the Stock Exchange quotation for which, although most of them have been higher since the end of the year, do not necessarily reflect their intrinsic value.

RAND COLLIERIES, LTD.

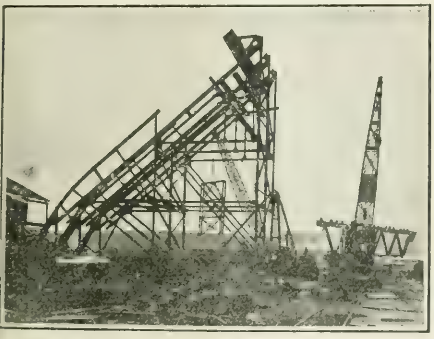
Review of the Year.

Presiding at the annual general meeting of the Rand Collieries, Ltd., Mr. French said: As you will see from the accounts which have been submitted to you, the indebtedness of your company to the General Mining and Finance Corporation, Ltd., rose during the year under review from £193,072 to £207,808. This increase represents, in the main, interest on advances less sales of machinery effected during the year.

Although as a result of the late strike the outlook for a reduction in mining costs has somewhat improved, the time has not yet arrived when a scheme for the refinancing of your company, with a view to restarting mining operations, can be seriously contemplated. The future position will be largely affected by the attitude of the labour unions, who have now an opportunity, since their eyes have been opened to the consequences of being led by extremists, to put reliable and sensible men in power, and to prove their bona fides by assisting to lower expenses to a point which will make propositions like yours attractive to capital. Only in this way will they serve their own best interests, as well as the interests of the community of which they form a part.

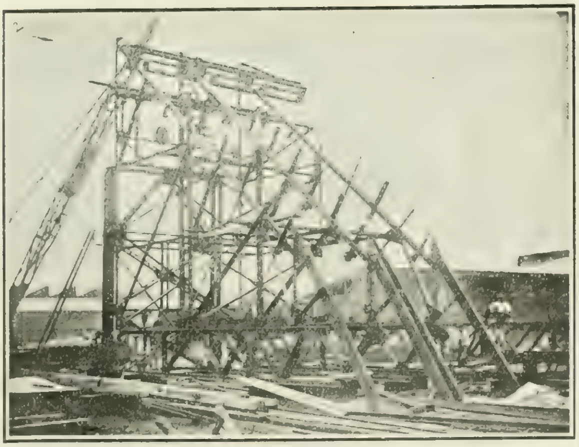
In the meantime, as your chairman indicated at the last annual meeting, a large portion of your freehold, the surface of which will not be required for mining purposes, has been laid out in small holdings. Considerable delay has taken place, as certain formalities had to be gone through in order to obtain the consent of the Government authorities to establish these holdings on proclaimed land. All the conditions have now been complied with, and the Minister of Lands has signified his assent to the issue of the necessary certificate granting the company the right to dispose of these holdings. In the near future, therefore, these plots will be offered for sale, and, as there is reason to believe that a good demand exists for property of this kind, it is hoped that a substantial revenue will be derived from this source.

STRUCTURAL STEEL-WORK.
BUILDINGS, BRIDGES, ROOFS, TANKS, HEADGEARS, ETC
Sole Agents for HELICAL REINFORCING RODS.
Large Stocks of Steel Joists, Angles, Channels, Bars, Plates, etc.
Agents for the HARVEY ENGINEERING CO., LTD., Glasgow.



Illustrations show part of an incline gantry for the Delagoa Bay Coaling Plant, under Construction.

GILBERT HAMER & CO.,
LIMITED.
Head Office and Works: CONGELLA WHARF, DURBAN.
Box No. 301. Telegrams: "Girders."
Telephone No. 872.
Johannesburg Office: ROYAL CHAMBERS, SIMMONDS STREET.



Manufacturers of all Classes
of STEEL WIRE ROPES,
including Flattened
Strand and Lock
Coil.

EXCELSIOR
WIRE ROPE COMPANY, Ltd., CARDIFF.

Sole Agents:
FLINT & EPTON,
HOWARD BUILDINGS,
JOHANNESBURG.

THE BALDWIN LOCOMOTIVE WORKS
(OF PHILADELPHIA, PENNSYLVANIA, U.S.A.)
BUILDERS OF LOCOMOTIVES SINCE 1831.
ANNUAL CAPACITY .. 3,500 LOCOMOTIVES.

Locomotives, Steam, Electric, Petrol (or other spirit) Fireless.
Locomotive Parts.
Railway and Ore Trucks of all types and sizes.
Cane and Industrial Cars and Tramway Equipment.
Wheels. Axles. Tyres.
Ladd Water Tube Boilers (to burn coal or bagasse).
Wilson Plastic-Arc Electric Welders.
Elwell-Parker Storage Battery Trucks.
Fitler Rope for Drilling and General Purposes.

WORKS AT
PHILADELPHIA AND EDDYSTONE, PENNSYLVANIA.
INDIVIDUAL SERVICE - WORLD WIDE
Loveday House, (Loveday and Marshall Streets), JOHANNESBURG
P.O. Box 7017.   Cable and Telegraphic Address: "BALDLOCO."   Telephone 1816.

WE DO THE BIGGEST MERCHANT TRADE IN SOUTH AFRICA.

IRON AND STEEL
BARS, ANGLES, CHANNELS, JOISTS, TEES,
PLATES, BOLTS AND NUTS, SHAFTING, Etc.

COPPER AND BRASS
RODS, SHEETS, TUBES, Etc.

M. BROWN,   STOCK SHEETS ON REQUEST
180, MAIN ST., JOHANNESBURG.

Telephones 5770 and 3248
Tel. Add.: "MAUBROWN,"
JOHANNESBURG.

The Diamond Revival—Oil Prospects—Nourse Mines Improvement—A West Rand Reconstruction.

The South African
Mining & Engineering Journal
THE ONLY MINING AND ENGINEERING WEEKLY PUBLISHED IN AFRICA.
Established 1891.

Vol. XXXIII., Part I. JOHANNESBURG, TRANSVAAL, SATURDAY, JUNE 24, 1922. No. 1604.

The New President of the S.A. Institution of Engineers.

Mr. J. W. Kirkland, the well-known engineer, and General Manager of the S.A. General Electric Co., Ltd., who has been elected President of the S.A. Institution of Engineers.

SIEMENS BROTHERS
& CO., LIMITED

RUBBER CABLES.
PAPER CABLES. FLEXIBLES

"STANNOS" WIRES.
ENAMELLED WIRES.

TELEGRAPH CABLES.
TELEPHONE CABLES.

JOINT BOXES.
COMPOUNDS. TAPES

CABLE APPLIANCES.

EBONITE.

TELEGRAPHS.
MANUAL TELEPHONES.
AUTOMATIC TELEPHONES.

RAILWAY, MINE, SHIP
AND
POWER STATION
SIGNALLING.

FIRE ALARMS.

TUBULAR POLES.
LATTICE POLES.

OVERHEAD LINE MATERIAL

FLUID & DRY CELLS.

Representatives in South Africa:

A. J. G. SIMPSON, A.M.I.E.E.
African Life Buildings, 85, St. George's St.,
CAPE TOWN.
P.O. Box 239, Cape Town. Telephone 1202 Central.

G. H. B. BERNARD, A.M.I.E.E.
9-10, Cotts Buildings, Rissik and Fox Sts.,
JOHANNESBURG.
P. O. Box 7404, Johannesburg. Telephone 408 Central.

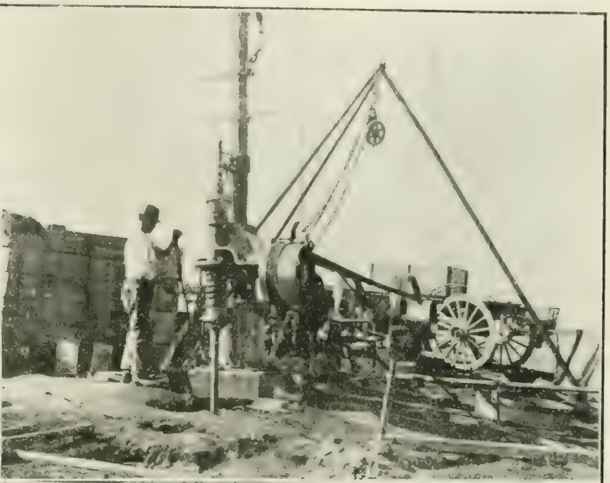
Telegrams: "SIEMENS."

Our Improving Prospects of Finding Oil.

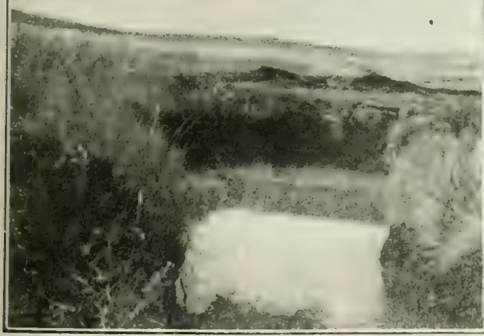
UNION PETROLEUM COMPANY, DESPITE INITIAL DISCOURAGEMENT, WINS PROMISING RESULTS.

Much time and money has been spent looking for oil in this country; but, the Union Petroleum Company appear to be the first people to produce any. Petroleum was first known to be in a spring on Elandspoort, the Company's farm, as far back as 1912—the farmers using the water for healing cuts, etc. This is exactly how petroleum was discovered in America. A sample of the water was sent to one of the banks for analysis and a certificate was furnished stating that the particular spring contained petroleum. Nothing was done to open the ground and prospect the proposition properly, until the Union Petroleum Company obtained an option to prospect. Before any work was done, however, it was thought advisable to obtain some professional advice. The only advice the company obtained was to leave the proposition alone; that it was nothing more than a stagnant pool, and, that any petroleum in the water would come from diatoms.

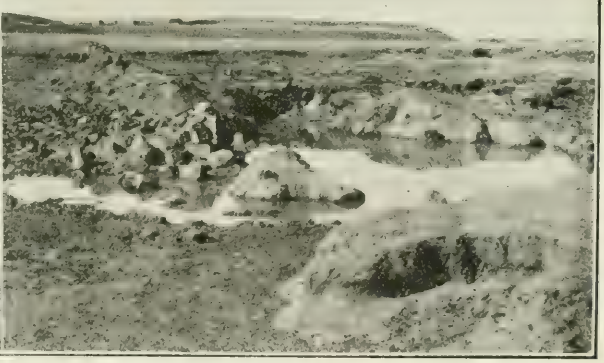
Drill at work on property.



Another view of drill at work on property.



Pool, near which Oil was struck at 602 feet.



Pool on the farm Elandspoort, near which oil was struck at 39 feet.

A Unique Discovery.

Fortunately the company did not follow this advice. The spring was opened and a hole sunk into the solid rock; and a sulphur spring discharging 4,000 gallons per hour was struck. Samples of the water were analysed and a certificate obtained stating that the water contained petroleum; further, that the discovery was unique in the annals of South Africa.

Prospecting of a very extensive nature was put in hand with all dispatch, other springs were opened up and analysis of the water made from each, those containing no trace of petroleum being eliminated.

This gave the prospector a definite line to follow. In course of time sufficient surface work had been done to determine what boring should be done, with the object of tracing and striking the origin of the oil. A series of short holes were put down and in the third one drilled close to the original place of discovery (which was at first called a stagnant pool) a body of oil was encountered at a depth of 39 feet.

Results of Further Work.

Never before in the history of South Africa had this happened. From the encouraging prospects a deep hole was then started. The strata passed through were diabase to a depth of over 300 feet, then sand stones and shales to 600 feet, when a sandstone was passed through having layers of graphite at intervals of 2 inches. Oil was struck at a depth of 602 feet and continued to flow while drilling through the particular formation down to 620 feet.

A large sample of the 100 gallons estimated to have come to the surface was brought to Johannesburg and proved to be crude petroleum. From the information obtained in drilling this hole the directors decided to take the advice of an expert in these matters; and, start another machine about three-quarters of a mile away, as being the most likely spot to strike a pool; the opinion being that the pot clays and oil sands passed through indicated that the hole was on the edge of a pool and not in the position where a large quantity of oil would be encountered.

Some General Considerations.

There are a good many people in this country who are under the impression that petroleum will not be found South of the Equator. The answer to this is that wells are being worked in Venezuela and Trinidad, whose output in 1917 was a matter of 67 million gallons of oil; and many companies are exploring the southern-most point of South America. There is no reason why oil should not be found in South Africa, in large quantities. Cunningham Craig in his report did not state that oil would not be found here, but, he said that in his travels he had not seen any formation likely to contain oil. How anyone can come to the conclusion that there is no oil in the country is beyond the average man. So far only parts of the country have been geologically surveyed; and, further, it is now an established fact that holes drilled at short intervals are so different that it is almost impossible to correlate one with the other

Who ever thought ten years ago that wells of oil would be struck in Great Britain; but such has happened in spite of what geologists said about the formation being very much against oil being found there. The adequacy of the world's supply of oil to meet the ever-increasing demands is a subject on which experts, though not unanimous, are well agreed, the consensus of opinion being that the outlook is not too bright.

This being so every help should be given to people who are out to exploit any likely place in South Africa for oil.

A geologist to begin with may say or only report on the probable, positive, or negative results, to be expected from drilling for oil in a given locality; but unless he is a good "guesser" that is his limit and, there is absolutely no reason why any technical man should definitely state that oil will not be found in South Africa.

It is a well known fact that a great number of holes drilled on the oil fields of America have drawn a blank; on the other hand, the company who strikes oil is made and there is no limit to their success from a financial point of view. One can quite imagine what it would mean to South Africa if oil in commercial quantities was found. South Africa to-day is a large consumer of oil and it is the earnest wish of every one that the efforts of the Union Petroleum Company should be successful. So far they are the only people who have found something tangible to go on, and, at the moment from what has been discovered their prospects seem exceedingly bright.

HEAD, WRIGHTSON & Co. (SOUTH AFRICA), Ltd.

63-66, STANDARD BANK CHAMBERS,
COMMISSIONER STREET,
P.O. Box 1034. JOHANNESBURG. 'Phone 3524.

Colliery Plant, Gold Mining Plant, Coal Washing, Conveying Plants, etc.

Coal Handling, Screening and Washing Plants.

"Marcus" Screens.
"Nota Nos" Coal Washers.

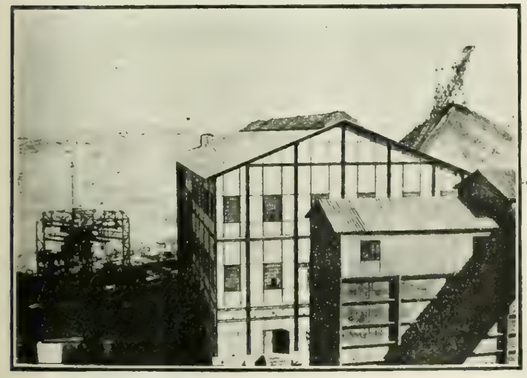
The Diamond Revival.

CONSOLIDATED DIAMONDS RE-START.

The renewed demand for diamonds appears to be both growing and genuine. The best proof of its reality is the official announcement that the Consolidated Diamond Fields of S.-W. Africa will re-start operations on a limited scale as soon as native labour is available. Rumours to that effect have been current for some time, but the official announcement was only made this week.

It may be remembered that Sir Ernest Oppenheimer, at the Consolidated Diamond meeting, was both hopeful and definite in his anticipations of a revival in the diamond market. He said that the current year would witness a revival in the diamond market, and he hoped by this time next year to have a better report to present to the long-suffering shareholders. Sir Ernest's actual words were: "Information from London indicates that the stream of Soviet diamonds has almost ceased to run. Taking this into consideration, and also the fact that the stocks of diamonds now held in America, our chief customer, are small, I think we are justified in expecting a partial revival in the diamond trade. I do not wish to convey that sales will assume the proportions they attained, say, in 1919 and 1920. Such an assumption would be much too optimistic, as the sales of large quantities of diamonds can, I think, only occur when the world has more nearly recovered from the losses sustained during the war, and when more stable economic conditions have resulted in a general trade revival. I do think, however, that we may confidently anticipate a partial revival in the diamond trade." The chairman of the company, Mr. H. C. Hull, supported Sir Ernest Oppenheimer's opinion, and said there appeared to be a better tendency in the diamond market. The directors had under consideration the possibility of resuming production during the current year, if the improvement in the diamond market was maintained. That prophecy is now, as we have seen, about to be fulfilled.

View of Central Plant at Kolmanskop.



Central Works of the Consolidated Diamond Company of South-West Africa.

Mining Men and Matters.

The next meeting of the C.M. & M. Society will be held this (Saturday) evening. Prof. G. A. Watermeyer, of the University of the Witwatersrand, will be declared president for this year.

* * *

With deep regret we have to announce the death of Mr. H. A. Rogers, a pioneer of Kimberley and the Rand, and a director of the Johannesburg Consolidated Investment Company, Ltd.

* * *

Mr. J. B. Powrie has resigned his position of Chief Accountant to the Consolidated Mines Selection/Anglo-American Group, and is joining the Executive Staff of the National Trading Company, Cullinan Building, on the 1st July, 1922.

* * *

At the monthly meeting of the South African Society of Civil Engineers, held at Capetown last week, and presided over by Mr. A. D. Tudhope, discussion was taken on Dr. A. L. du Toit's paper on "Geology in Reservoir Construction." Several members testified to the valuable character of the contribution, and a vote of thanks was tendered to Dr. du Toit. A paper by Mr. W. Ingham, Chief Engineer of the Rand Water Board, was afterwards read, the subject being "Vaal River Scheme: Service Reservoirs Recently Constructed by the Rand Water Board."

* * *

Mr. Tom Honey, who has been so long and honourably known in London in connection with South African mining, and particularly with Johannesburg Consolidated Investment interests, has just celebrated his 70th birthday, on which occasion he was presented in mail week with a silver rose bowl, bearing the following inscription:—"Presented to Mr. Tom Honey by the entire staff of the Johannesburg Consolidated Investment Co., Ltd., on the occasion of his 70th birthday, as a small token of the great respect and affection with which he is regarded.—May 29th, 1922."

KLERKSDORP DISTRICT ACTIVITY.

The encouraging reports from the Africander has directed attention to the prospects of recovery in other dormant properties in the Klerksdorp district. For instance, for some time past it has been known that negotiations have been proceeding between Mr. A. J. van Lingen, owner of that portion of Buffelsdoorn which includes the workings of the now defunct Buffelsdoorn G.M. Co., and some Randites who have been attracted to the spot in consequence of their previous knowledge of the mine and by recent examination. The Klerksdorp paper says that the negotiators are desirous of securing the right to work the property, and Mr. Van Lingen is willing to deal with them, and all details have been agreed to. The farm has, however, been deproclaimed, and the first step towards mining, according to the law, is working under prospecting licences, discovery of payable gold or of prospects pointing to payable gold, then application for proclamation, the owner first reserving the mynpacht and other rights. As so much is known of the mine by the applicants, all necessary agreements have been entered into, and all that remains to be done is to comply with the requirements of the law, and steps to this end are already in hand.

RYLANDS' STEEL WIRE ROPES

MANUFACTURED BY:
RYLANDS BROTHERS, LTD.,
WARRINGTON, ENGLAND.

SOLE REPRESENTATIVES FOR UNION OF SOUTH AFRICA:—
ARMSTRONGS & MAIN, LTD.,
84, Marshall Street,
JOHANNESBURG.
P.O. BOX 5988. 'PHONE 5203.

LARGE STOCKS ON HAND.

SPECIALISTS ..

IN THE MANUFACTURE AND DESIGN OF
STRUCTURAL STEELWORK.

ARMSTRONGS & MAIN, LTD.,
GENERAL AND CONSTRUCTIONAL
.. ENGINEERS, ..
84, Marshall Street,
JOHANNESBURG.

P.O. BOX 5988. TELEPHONE 5203.

The Late Major Henry Adams Rogers.

In the passing away of Major Henry Adams Rogers the Rand has lost one of its oldest pillars and South Africa one of its best-known residents. Born at the Cape, the Major started life at 12 and throughout his long business career has been known as a hard worker. The name of Roger Bros. would convey nothing to-day to the ordinary man in the street, but there was a time in the history of Kimberley that it sounded as familiar as the Corner House here to-day and to those old-timers that still live and remember, will awaken happy recollections of forty years ago. The public life as well as the commercial of old Kimberley bore the imprints of the name of Rogers. When the Rand was discovered the brothers entered into its mining life and became directors of many of its principal concerns.

The discovery of gold, of a great gold field, one that had lasting qualities, spelt industry; therefore, when the Rand was discovered, it drew a band of men who had already mastered and decided the destinies of the greatest diamond mines in the world and amongst them were those whose minds were busy with problems embracing half a continent. In the pursuit of wealth many had to burn their boats and accept the strange chances of a new field and of these were Messrs. Roger Brothers. Dame Fortune certainly was with them, for they undoubtedly took chances; but through the assistance of cyanide of potassium and the great adjacent coal field their efforts triumphed and a great lasting industry eventuated. The brothers became directors of many of the principal mines and for a lifetime devoted themselves to their welfare.

The Late Major H. A. Rogers.

They saw little ten-stamp propositions developed into great mammoth mines that attracted the attention of the mining world.

In the fast growing life of a new country the milestones are apt to be over-looked, yet, one who has grown with the changes from ox-wagon to steam and electricity, knows and feels its evolution to the full.

I daresay, of all the old directors, Major Henry Adams had the longest term of office, and beyond mining his interests extended to townships, plantations and the very life of the town itself.

There was a time when the world was younger and fortunes were made without deep effort, when in that little space " between the chains " in Simmonds Street, men would sun themselves clad in light flannel suits and smoking great Vale' Vale' cigars and discuss mining business of deep import. Everything seemed so concentrated and brotherly. There was no trouble with labour—white or black—and the dark cloud of war had not yet cast a shadow. Vividly I can see all the faces of representatives of the various mining houses. Many of them are long ago dead, but like all the dead of empty cities, they could live again, if the pen of some mighty writer bid them to live, but there in the old sunshine with mirth and hope, men bought and sold, made promises and exchanged cables. And in that atmosphere many of us and amongst them Roger Bros. passed some of the happiest moments of our lives.

In 1874 the late Major Rogers married Ann Dora Taylor (Annie), daughter of one of Kimberley's earliest pioneers, Isaac Rowland Taylor. The Rogers family have resided at Wanderers View for many years and when the Boer War broke out the Major threw himself into the work of forming the Imperial Light Horse and proceeded to Natal, where the regiment went into action. His son Frank was killed at Waggon Hill and on Tuesday the regiment accorded its last honours to its old officer.

W.P.T.

Rand Mutual Assurance Company Prizes.

The Right Hon. William Brace presented the prizes last Saturday for 1921 in the Safety Competition held by the Rand Mutual Assurance Company at the Selborne Hall, Johannesburg. Mr. Raleigh was in the chair, and in introducing Mr. Brace said he was pleased that such a well-known gentleman would present the prizes. Mr. Raleigh stated that the Rand Mutual Association, which was allied to the Chamber of Mines, had performed a very fine work on the Rand and done much to lessen the number of accidents and deaths through carelessness. The company, he said, was not out to make profits. Its object was to see a square deal done to the employee. The speaker gave figures showing that since the Rand Mutual was formed that by following its advice both miners and natives had learned methods whereby the Safety First movement had been shown to advantage. The Right Hon. William Brace, before presenting the prizes, spoke of the great risks run by miners in the gold mines in extracting the wealth from the ground. In the past, he said, there had been a considerable wastage of human life, but this had to a large extent been ameliorated by the efforts of the Rand Mutual Association. In all parts of the world, said the speaker, mining was a war with Nature. The Safety First movement taught the miner to protect himself. He was glad to see such a big attendance in the Selborne Hall, which showed that the Rand Mutual Assurance had the full support of both employers and employees. He then presented the prizes. The prize-winners:—Class 1, New Modderfontein G.M. Co., Ltd. Class 2, Modderfontein B G.M. Co., Ltd. Class 3, Rose Deep, Ltd. (Glen Section). Class 4, Crown Mines, Ltd. (West Section). Class 5, Durban Roodepoort Deep, Ltd. Class 6, Simmer and Jack Proprietary Mines, Ltd. Special prize for no return New Unified Main Reef Co., Ltd.

The Half-Year's Dividends.

GOLD, COAL AND FINANCE COMPANY DECLARATIONS—COMPARISON WITH DECEMBER FIGURES.

The following are the dividend declarations for the first half of the current year announced up to the time of going to press:—

Dividends declared payable to shareholders registered as at 30th June, 1922:—

December Dividends 1921.			June, 1922.			
No.	Amount.	Company.	No.	Coupon.	%	Amount.
31	6d.	Apex Mines, Ltd.—10/-	32	—	5	6d.
19	3/6	City Deep, Ltd.	20	—	7½	1/6
24	1/6	Clydesdale Colliery	25	—	2½	6d.
41	2/3	Crown Mines, Ltd.—10/-	42	—	5	6d.
41	2/3	Crown Mines—Debenture Interest ..	—	—	2½	£2/10/-
9	6/-	Government Areas	10	10	20	4/-
14	2/-	Geduld Props.	15	—	6¼	1/3
—	—	Johannesburg Consolidated Investment	—	—	7½	1/6
85	4/3	Modder Deep Levels—5/-	86	—	50	2/6
29	2/9	Modder "B" G.M. Co.—5/-	20	—	30	1/6
64	10/-	Meyer and Charlton	65	65	50	10/-
		Modder East Debenture Interest ..	—	—	4	£4
31	5/-	New Modderfontein—10/-	32	—	20	2/-
33	9d.	Nourse Mines	34	—	2½	6d.
38	1/- & Bonus 6 per cent.	Natal Navigation Collieries	39	—	5	1/-
28	2/-	Pretoria Portland Cement	29	—	7½	1/6
37	1/9	Rand Mines—5/-	38	—	20	1
41	1/6	Rose Deep	42	—	5	1/-
		Stock Exchange Prop. Rt.	—		—	£5
17	6/-	Van Ryn Deep, Ltd.	18	18	20	2
35	3/-	Witwatersrand (Knights)	36	34	5	1

WE DO THE BIGGEST MERCHANT TRADE IN SOUTH AFRICA.

IRON AND STEEL

BARS, ANGLES, CHANNELS, JOISTS, TEES,
PLATES, BOLTS AND NUTS, SHAFTING, Etc.

COPPER AND BRASS

RODS, SHEETS, TUBES, Etc.

M. BROWN, STOCK SHEETS ON REQUEST
180, MAIN ST., JOHANNESBURG.

Telephones 5770 and 3248
Tel. Add.: "MAUBROWN,"
JOHANNESBURG.

A West Rand Consolidated Reconstruction.

FUTURE OF A LARGE PROPERTY IN THE BALANCE—AMBITIOUS PLANS THAT DEPEND ON WORKING COST REDUCTION.

A striking object lesson in Rand mining economics is provided by the case of the West Rand Consolidated. This large property is being worked on a comparatively small scope and on a very narrow margin of profit when it should be handled on much more comprehensive and on more broad gauge lines. As its Chairman said recently: "This is only one of the many cases on these fields where a lower standard of working costs and more efficient work would bring into the category of payable ore hundreds of thousands, or even millions, of tons of rock which would in turn allow of increased outputs and automatically the employment of a large additional number of white workers, otherwise possibly unemployable by the Industry."

Few mines on the Rand stand to benefit more from reduced costs and settled conditions than the West Rand Consolidated. Though weighed down by a capital of £2,004,424 and a debenture issue, the company has been crushing only about 33,000 tons per month, and making profits of a few pence per ton, costs have ranged up to 26s. 3d. (in December last) and have since the strike been reduced to 22s. 4d. for April and 23s. 5d. for May. The question is what is to be the future of this great area of the West Rand which is under Albu control, and the Chairman, Mr. French, dealt with that question very clearly in his speech at the annual meeting the other day. There is a real danger that Mr. French's remarks may be overlooked in the plethora of recent speeches from the chair, and we make no apology for quoting some of them at this juncture.

"Are we to be content," said Mr. French, "with the procedure of the last few years, of developing and mining valuable ore for the sake of making a working profit of a few thousand pounds per month—hardly sufficient to cover the current capital expenditure? Or is there any possibility of so expanding development and mining operations as to justify the enlargement of the reduction works to a capacity more in accordance with the huge mining area held by the company? These are questions which we have had before us from time to time, but with the high level of working costs ruling in recent years, the uncertainty attaching to the premium on gold, and the ever-present possibility of industrial troubles, it was hopeless seriously to contemplate the provision of the very large amount of additional capital required. Now, however, that reasonable re-organisation on the mine has been rendered possible, and that, with the falling price for stores and the elimination of the cost of living allowances, there is a possibility of an appreciable reduction in working costs, the outlook for attracting capital has undoubtedly improved. In fact, I have no hesitation in saying that if we can look for settled labour conditions for a period of years, we shall make very strenuous efforts in the near future to either reconstruct or refinance the company in such a manner as to provide the requisite moneys—if not for the whole scheme of expansion, at all events for the considerably increased scope of development which is so vital to the future prosperity of this concern. The effect on working costs and profits of appreciably increasing the tonnage milled would undoubtedly be very marked. There are certain standing charges, such as licences on our huge area of over 2,000 claims, the heavy cost of pumping operations, and of the surface transport arrangements, which at present have to be spread over a comparatively small tonnage.

Large Scale Economies.

"If the treatment capacity were increased to approximately 60,000 tons monthly, these standing charges would remain constant, but the cost per ton milled would show a very considerable decrease. And in this and other directions the effect would be a marked drop in working costs. Now let us consider what this would mean. Assume that we could bring up the tonnage milled to 60,000 tons, and that we were able to reduce working costs to, say, 17s. per ton. With gold at the normal value of 84s. net, the pay limit of our ore reserves would be 4.8 dwts. per ton, as compared with 5.9 dwts. adopted in calculating the reserves at the close of last year. It will interest you to learn that the amount of ore now standing in the mine (not included in our present ore reserves) of a value between 4.8 and 5.9 dwts. is over 730,000

West Rand Consolidated: View of the Surface Plant.

[illegible] of which, being fully developed, would automatically come into the ore reserve directly the working costs dropped to the neighbourhood of 17s. per ton. In other words, the present ore reserve would at once increase to something like 1,750,000 tons. But there is a further aspect. With a pay limit of 4.8 dwts. the percentage of payable ore accruing from current and future development operations would naturally also show up at an appreciably higher figure than under the existing factor of 5.9 dwts. I have only dealt so far with the influence of low working costs on building up a very substantial ore reserve: you can easily figure out for yourselves the possible working profits if the monthly output were increased to 60,000 tons, even if the margin proved to be only a few shillings per ton

Fifty Years Life!

"That is a position which might quite conceivably be attained in the course of a few years if we can work under economic and efficient conditions, and if we can provide the necessary funds, in the first place for a largely increased scope of development operations, and subsequently for the material increase of the reduction plant which would be thereby justified. It is obviously a desirable objective for shareholders, but is it not equally desirable from the point of view of white labour? Surely it is much more in the interests of labour that a mine such as ours with a possible life of over 50 years should be worked under such conditions as to allow of its expansion to a big and prosperous proposition, with additional scope for employment at every stage of its advancement, rather than it should be worked on the restricted and uneconomical basis at present prevailing."

MAIZE ELEVATORS.

In a report on the erection of grain elevators issued by Mr. W. H. Clark, grain elevator engineer, it is stated (says *Industrial South Africa*) that at the 42,000 tons terminal elevator at Durban foundations for the storage portion of the structure have been completed, and the basement storey, bringing the work up to ground level, is about half constructed. The foundation for the working-house, where the weighing and cleaning of the maize is done, and also the substructure for the wharf gallery, from which the grain is spouted directly into the ship's hold, are all well in hand at Capetown, where the elevator will be of 30,000 tons capacity. The only suitable site has been found somewhat difficult owing to the large amount of water encountered in the foundations. This water trouble has delayed construction there, but it is anticipated that a commencement will be made with the building at no distant date.

Regarding the country elevators, a start with the construction has been made on the group in the Free State, and in the course of the next two or three weeks further groups in the Transvaal will also be under way. Work is being rushed forward with the utmost energy, both by the Railway Administration and the contractors, as it is realised that the large savings anticipated from the successful working of the bulk grain handling system should be a considerable factor in the restoration of commercial prosperity. At the moment there appears to be a possible cause of delay in the completion in the serious strike in the engineering trade in England, where the bulk of the mechanical equipment and structural work is being fabricated. This is a matter of which it is impossible to foresee the consequences at present.

Gold Discovery in South-West.

From Kalkfontein reports are made of the discovery of a new gold reef in the Keetmanshoop district, which is said to be very rich, the results of four assays being, it is stated, an average yield of 4ozs. 11dwt. to the ton.

STAFFORD MAYER COMPANY (South Africa), LIMITED.
(INCORPORATED IN MAURITIUS.)

30, Commercial Road, DURBAN.

Codes: Bentley's A.B.C. 5th Edition. P.O. Box 1381. Telephone 3273.
Cable and Telegraphic Address: "STAFMAYER," Durban.

AGENTS FOR:
ENYATI COLLIERY, LTD.
BUFFALO COLLIERY, LTD.
BERNICA COLLIERY, LTD.
BOSCHHOEK ANTHRACITE COAL, LTD.
(INCORPORATED IN MAURITIUS).

Telephone No. 80. Telegrams and Cables: "ENYATI." P.O. Box 31, Vryheid, Natal.
Codes: Broomhall's Imperial Combination; A.B.C. 5th Edition.

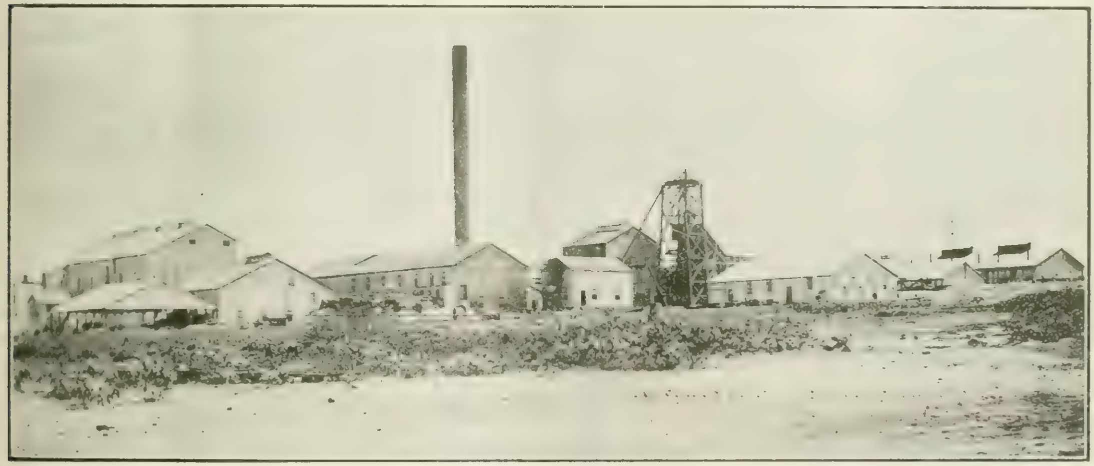
ENYATI, BERNICA and BUFFALO COLLIERIES are Contractors to the Admiralty and South African Railways.
FIRST GRADE Coal supplied for Export, Bunkers and Industrial Purposes.

AGENTS FOR **ALBION SHIPPING CO.,** PORT LOUIS, MAURITIUS.

Improving Position of Nourse Mines.

A DIVIDEND DECLARED—DEVELOPMENT YIELDING BETTER RESULTS—COST REDUCTION PROSPECTS.

The fact that the Nourse Mines has been able to declare a dividend of 6d. per share, which is equal to the amount distributed for the same half of last year, has drawn attention to the improving position of this property, which has lately been much in the public eye. It may be remembered that considerable underground reorganisation work was carried out at the mine last year, and a new scheme of attack was inaugurated in which a rearrangement of the south-eastern shaft of the South Nourse section played an important part. That work, together with the installation of a new pumping plant rendered necessary by the closing down of the New Heriot—was successfully completed, and the mine is now reaping the benefit. Working costs and the development of the southern section are the two main factors that govern the position and prospects of the Nourse Mines, which may otherwise be described as a typical low grade property. To deal with working costs first, it is satisfactory to note a substantive and progressive reduction in costs since the resumption of operations after the strike. The following figures for November, December, April and May show this:



NOURSE MINES.

1921	Tons	Revenue. £	Cost. s. d.	Profit £
Nov.	45,800	78,077	30 11	7,291
Dec.	45,800	69,500	30 0	893
1922.				
Mar. quarter	43,550	61,279		*40,298
April	34,100	51,538	28 1	3,689
May	42,500	60,869	24 10	8 026

Dividend: 1s. December, 6d. June, 9d. December.
*Loss.

Working costs for the year ended June 30, 1916, which were the lowest yet recorded, amounted to 19s. 11d. per ton milled. Costs for the year ended June 30, 1921, averaged 30s. 10d. per ton milled.

Future of Working Costs.

Speaking on this vital question at the annual meeting of the company in November last, the chairman, Mr. E. G. Izod, said: "White wages have increased in the period named by 3s. 8d. per ton milled; native wages by 8d. per ton milled; stores by 4s. 1d. per ton milled, and other costs by 2s. 6d. per ton milled. With a 26s. or 27s. grade, calculated on the normal price of gold, it will obviously be impossible to work our mine unless there is an all round decrease in expenditure. Let us look quite frankly at the direction in which we can see some hope of relief. Stores costs, although still high, show a tendency to reduction, but, even were we able to foresee a reduction to the prewar figure, we would still not have reduced our costs sufficiently to prevent a loss with gold at 85s. per ounce. Other costs are very largely made up of miners' phthisis insurance and compensation, electric and air power purchases, holiday and sick leave pay, etc., and I cannot, at the moment, foresee any substantial saving which can be effected on these particular items. The last item of expenditure which shows a heavy increase is that under the heading of white wages, and it is folly to shut our eyes to the position which must be faced sooner or later, namely, that in whatever other direction expenditure is curtailed, it will be necessary to also reduce our white wages bill." Mr. Izod, however, concluded by saying: "I am going to make an optimistic prophecy that, as we have to adapt ourselves to more difficult conditions, not only shall we succeed in increasing efficiency and reducing costs, but that, with the help of public opinion and the support of our workers, this great industry in general, and the Nourse Mines in particular, will be able to work at a profit of 6½ dwt. ore, and even ore of a lower grade, for very many years to come." That prophecy very fortunately seems like coming true.

Favourable Development Results.

Development results from the Southern section are reported to be favourable. In regard to the position of the mine generally, the chairman said at the last annual meeting in November that "the upper section, which supplies about half of our mill tonnage, is being gradually worked out and, in about a year or eighteen months from now, this tonnage will have to be replaced from the southern and south-western sections, served by No. 2 South Nourse shaft, and from the south-eastern section, served by No. 1 South Nourse shaft. The south-western section can be described as a main reef leader area, disclosing good values on development. The south-eastern section is at present undeveloped, but work is proceeding as fast as is permissible on the 27th level cross-cut, from where driving will take place to explore this new country." In last September quarter the grade of main reef leader was 14.7 dwts. over 31 inches, in the December quarter 14.2 dwts. over 26 inches, and in the March quarter this year 18.6 dwts. over 18 inches. Recent developments, mostly in the S.W. section next the rich City Deep shoot, should they continue their present trend, must raise the value of the ore treated and expand profits.

DIXON'S
GRAPHITE
PIPE JOINT
COMPOUND

DIXON'S COMPOUND is a revelation to those who have never used it before. The ease with which threaded joints can be screwed up tight, and also the ease with which joints can be opened, is a pleasant surprise to the man who has previously used red lead or other common form of joint cement.

It is not necessary to "cement" joints to make them tight; Dixon's lubricates the threads and therefore permits joints to be taken up even tighter than is possible otherwise. Furthermore, Dixon's Graphite Compound does not harden or "set." Whole lines of piping can be quickly taken down and put together again without the necessity of smashing a single fitting. Joints made up with this compound cannot rust, corrode or stick, but may be opened without difficulty after any length of time. Fittings can be used repeatedly. There is no waste of time or materials.

One pound of Dixon's Joint Compound is equivalent to about four pounds of red or white lead, mixed, and is therefore less expensive. It is also non-poisonous. To use ordinary pipe dope is not economical nor is it good engineering practice

Get the Genuine Dixon's Pipe Joint Compound in the Red Label Tin.

Made in Jersey City, U.S.A., by the

JOSEPH DIXON CRUCIBLE CO.

Established 1827.

Graphite Crucibles, Flake Graphite, Boiler Graphite, Silica-Graphite Paint, Pipe Joint Compound, Cup Greases, Waterproof Greases, Belt Dressing.

Foreign Sales Agents:

WALWORTH INTERNATIONAL CO.,
NEW YORK CITY.
Offices in all Principal Cities.
P.O. Box 3662. Johannesburg. 'Phone 3195.

DAVIS'S PIT WATER GAUGE.

Davis Made means Highest Grade.

The scale being behind the tubes, the division lines are seen across the whole width of each tube, rendering accurate reading possible.

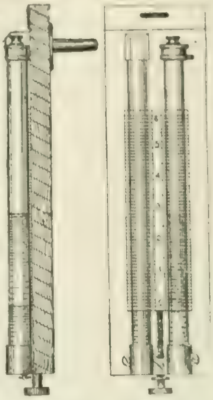
The tubes, instead of being the usual U shape, are composed of two separate pieces of straight boiler gauge glasses, sealed into a brass block; thus they can be readily and inexpensively repaired.

In the lower brass block a tap is inserted with a small hole, thus considerably contracting the connection between the tubes, and minimising the oscillation of the water column.

The tap may be turned off, thus registering the height of water column, and the Water Gauge brought to a good light to read.

There is an easy provision for filling and re-filling.

Bartle's can supply the Davis Pit Water Gauge from stock.



Made by JOHN DAVIS & SON, (DERBY) LTD., ENGLAND.
Agents for South Africa
BARTLE & COMPANY, LTD.,
LOVEDAY HOUSE. Box 2466. Phone 3553. Wires "FAGGOT."
JOHANNESBURG.
Box 444 KIMBERLEY. Box 1228 DURBAN.

RHODESIA NATIVE TIMBER CONCESSIONS,
ELOFF STREET EXTENSION,
P.O. Box 5530. JOHANNESBURG. 'Phone 2671.

SPECIALITIES. Rhodesian Teak for Sleepers, Flooring, Lagging, and all Mining purposes; is impervious to water, unequalled for Strength and Durability, and low in price.

Rhodesian Mahogany. Specially recommended for Truck Frames, Guide Blocks, Furniture, etc.

PRICES AND ESTIMATES ON APPLICATION.

Working Hours on Transvaal Coal Mines.

CASE FOR MR. I. HODGES' NOVEL SCHEME—SMALL ADVERSE MAJORITY—REASONS FOR THE STEP.

Last week it was brought up in evidence before the Mining Industry Board by representatives of the collieries that on the Lewis and Marks group white men had been extended from 48 to 64 hours per week, and it was suggested that the management had taken advantage of the men's failure to win the strike by imposing upon them harsh terms in the matter of hours. Accordingly, Mr. Isaac Hodges (general manager of the group which includes the Cornelia Colliery in the Vereeniging district, the Largo Colliery in the Springs district, and the Schoongezicht Colliery in the Witbank district) presented himself before the Board, at its request, supported by the various mine managers, and gave lengthy evidence—from which we print extracts below—in support of his scheme. After hearing the evidence, it was ultimately agreed between Mr. Hodges and the Board that a ballot should be taken as speedily as possible, under the direction of the Government White Labour Department, and Mr. Hodges on behalf of the management, and Mr. Hobson on behalf of the men, agreed that no pressure should be brought to bear on the men from either side, that no victimisation should follow the result, whatever it might be, and that if it was in favour of a return to the eight-hours' shifts the change would be effected without making any trouble. The ballot resulted in a majority of one in favour of a return to the eight-hours' shift.

In the course of his evidence before the Mining Industry Board, Mr. Hodges stated that the conditions on the Cornelia and Largo Collieries were different from those prevailing on other coal mines in this country. The Cornelia and Largo coal seams were greatly contorted with a difference in some cases of 100 feet on the horizontal level. The Cornelia Colliery also had to deal with about three million gallons of water per day, and water rushes were frequent. There was also the chance of gas; not much, but sufficient to compel examination by a white man before the natives could be allowed to start work. This examination occupied from 1½ to 2 hours per shift. The Cornelia mine, therefore, took a long time for the workers to get to and from the actual working place. The natives worked in 10 hour shifts, and when, in May, 1919, the European miners insisted on an eight hour shift complications at once arose, as it obviously was very difficult to work the natives on 10 hours shifts and the white on eight hours. The trades unions of those days would not let the men work the extra time, even though he (Mr. Hodges) offered to pay them overtime. The request was refused on the ground of "systematic overtime." He was, therefore, compelled to work three shifts of eight hours each for the European miners to supervise the two 10-hour shifts of natives, which involved raising the complement of European miners from 16 to 24, also the appointment of an additional miner to take the place of miners on holiday leave, making a total of 25. The introduction of an eight-hour shift for European miners compelled the overlapping of the European and native shifts, and so each native working shift had to have different bosses during the progress of the shift. The European miner found himself unable to strictly comply with the 48-hour week insisted upon by trades unions, and ultimately a three-week's cycle had to be arranged giving for the first week six days (including Saturday) of nine hours per day, equalling 54 hours; and the second and third weeks five full days of nine hours each (excluding Saturday), making a week of 45 hours.

Dissatisfaction.

This scheme of eight-hour shifts, however, which involved two white bosses for each shift, caused great dissatisfaction amongst the natives and considerable trouble resulted therefrom. It was an accepted fact that each shift of natives worked best under one boss, and the introduction of two bosses brought in its train charges of favouritism, unfair treatment, faulty discipline and errors in payment which resulted in decreased efficiency, higher working costs and a higher accident rate. The enforced engagement of nine miners at a time when work was plentiful and competent miners were difficult to obtain naturally resulted in incompetent miners being employed, which, in a pit bristling with mining difficulties, lowered the general standard all round, and threw increased responsibilities on the management and extra burdens on the natives; at the same time, it became

The Cornelia Colliery, Vereeniging, where Mr. Hodges introduced his two shift scheme.

increasingly difficult to discharge incompetent miners as the local branch of the Mine Workers' Union ranged its power behind the incompetent ones and dared the company to proceed with the discharge—the threat of closing the colliery, stopping the Vereeniging Power Station, and slowing down the gold mining industry being the principal weapon used. When the European strike commenced, the colliery continued to work under the supervision of the officials, double-shift working was discontinued for the time being, and the single day shift was supervised by one boss as had always been the case previous to May, 1919. Improved results were immediately apparent, and the colliery quickly reached a maximum tonnage for the day-shift without a single miner being at work.

The New Scheme.

When the European miners showed an inclination to return to work, Mr. Hodges said he formulated a scheme whereby he thought the colliery might restore the conditions that applied previous to May, 1919, and discussed the whole position with the manager, mine captain, and shift bosses, and on having their hearty approval further discussed the scheme with the first set of European miners who presented themselves for the work on February 20. On March 5 a further conference took place, when it was generally agreed that efficiency of natives could not be secured under the old control, viz., three shifts of whites to two shifts of natives, and it was decided to adopt the new scheme for an experimental period of six months dating from April 1. The basis of the scheme was that the status of the miner should be raised to that of an official so as to give him a higher standing and secure his co-operation in achieving the most economical methods of working. It was agreed the miners should be paid a monthly salary and should undertake the whole supervision of a single shift of natives (examining the working-faces for gas, bad roof, etc., certifying each working-place as safe for working before natives were allowed to leave the "box," and supervising the natives during the working shift), so that the entire examination, supervision, and termination of the native working shift would be in the hands of one European. This necessarily lengthened the shift of the European, and it was agreed that, as the workings were a long distance from the shift, to give sufficient time for an adequate examination before the shift, and supervision for the whole of the shift, the European official would need to work an 11-hour shift "bank-to-bank" to ensure a 9-hour working shift for the natives. As these were long hours, necessitating on the long week five days of 11 hours, equal 55 hours plus Saturday 9 hours, equal 64 hours per week, it was agreed that the Saturday afternoon shift should be discontinued except on emergency, the alternate week being five days of 11 hours, equal 55 hours, making a total of 119 hours per fortnight, or an average of 59½ hours per week.

Salary Replaces Wages.

The salary for the experimental period was fixed at £40 per month, inclusive of holidays from any cause, and if the experiment continued it was agreed that a fortnight's holiday should be allowed without any deduction of pay; notice of termination of employment to be fourteen days on either side. Owing to the Victoria Falls Power Company picking up their load quicker than was expected, coupled with the larger demand from coal merchants due to the winter season, as also the colliery being very short of native labour, it has not been possible to discontinue the Saturday afternoon shift until this week, but now that the Vereeniging Power Station has commenced its annual overhaul and will consequently require diminished supplies, Saturday afternoon shift will be stopped this week and throughout the period of the overhaul, say eight or ten weeks, and when the power station recommences on full load it is likely the summer weather will reduce the demand from coal merchants to compensate, so that the Saturday afternoon shift is not likely to be required again for the remainder of the year. The new arrangement is working very satisfactorily, giving contentment to the native, an improved status and salary to the European miner, and a lower accident rate and improved efficiency to the management. Whilst the monthly salary for the European miner was being arranged, the winding-engine men applied to be put on either contract rate or a monthly salary; but, as the number concerned was so few, it was decided to continue working on the eight-hour shift. All daily-paid European workmen other than miners are working on eight-hour shifts at the standard rates of pay.

Criticism.

Referring to the remarks of the South African Mine Workers' Union, the criticism of the Cornelia miners now working on a monthly salary is mere vituperation, as all the miners now employed were members of the S.A.M.W.U. and whilst members thereof were classed as competent miners. All the miners raised to the new status of officials have been drawn from the old hands, and, notwithstanding their present criticism, all the European miners formerly employed have applied for re-employment on the higher status at the salary of £40 per month. To help the men the onsetters were selected from the surplus miners and were paid at the highest onsetting rate until sections were ready for them, and on their employment as miners other miners were selected to take their places as onsetters. On the Largo Colliery similar conditions were unanimously accepted, as all agreed that the three-shift European supervision of two-shift natives was very unsatisfactory. The hours worked by the miners on the new basis are five days at 10½ hours and Saturday 7½ hours, making a total of 60 hours per week. The results achieved on this colliery under the new system are a great improvement on the past. In the month of May a record output was produced, although a large percentage of the natives were new recruits. The Schoongezicht Colliery is a new proposition not yet in complete working and only two white miners are employed there and a few mechanics. So soon as the colliery can secure orders and get the mine going the conditions as prevailing in the Witbank district will be observed.

THE RHODESIAN OUTLOOK.

Speaking at the recent annual meeting of the Mashonaland Agency, Mr. H. L. Stokes said, *inter alia*:—When I addressed you a year ago Rhodesia and South Africa generally was experiencing a trade depression which it was hoped was merely temporary and would shortly disappear. These adverse conditions have, however, continued during the year under review, and, unfortunately for trading concerns which held large stocks, have been accompanied by a very serious decline in the market value of all commodities, thus necessitating drastic writing down in adjustment of values to the market conditions. This depression has not confined itself to general trading. Another adverse factor has been the serious depreciation which has taken place in the market value of cattle. At the end of our previous financial year, and for a considerable period after that date, the ranching outlook was very favourable owing to the satisfactory prices obtainable for all classes of cattle, and which was reflected in the report of our ranching manager, who then estimated the average market value of our herd at about £7 17s. a head. This satisfactory outlook, however, has been arrested during the year under review owing to the serious fall which took place in the price of cattle, and which has resulted in our herds, consisting of over 10,000 head, being worth less than half the amount at which they were valued last year. This we hope is only a passing phase.

Pretoria Silver Lead.

RAISING FURTHER CAPITAL FOR DEVELOPMENT.

The Pretoria Silver people are issuing £30,000 10 per cent. debentures to finance further development. A circular has been issued to shareholders stating that the results of the opening up of the lode confirming, as it does, foot by foot at depth, the results obtained over 1,000 feet of surface stripping of the lode, are so satisfactory that the directors have decided to push ahead with a policy of active development. For this purpose further funds are required. The lode has been opened up or traced on the surface through the greater part of the mining area of 1,600 acres held by the company, and on the adjoining property, the Transvaal Silver and Base Metals, Limited, have reported the continuation of the Silver lode to a depth of over 300 feet with every sign of permanence. In the mine at the first level, 130 feet, the lode is opening up strong and consistent. To treat the rich development ore now being mined, and that already developed, as mentioned above, to the best advantage, a reduction and concentration plant is necessary. To provide this, to sink your No. 2 Main Shaft another 100 feet so as to open up the next level at 230 feet, to prepare the mine for stoping on both levels, to provide for existing liabilities and for future requirements, will require the provision of a sum which is estimated at not more than £30,000.

Mining Policy.

It should be understood that the company does not contemplate a complete treatment of ore, nor is complete treatment necessary for the mine to return very handsome profits as a prominent English firm has offered to take all the concentrates produced. As soon as the concentration plant is provided the concentrated ore can be sold at good prices, not only to the above-mentioned firm, but to other firms in South Africa, Japan, London, and on the Continent.

There is a very strong demand for silver lead concentrates all over the world to-day, and there are now before the directors offers to enter into contracts with the company over a period of years at highly remunerative prices, but before either transportation or treatment is commenced, it is necessary, in order that the company may derive the fullest benefit, that the waste portion of the ore should be eliminated.

The directors have given most careful consideration to the manner in which the above-mentioned sum of £30,000 is to be provided and have concluded that the position of the holders of options certificates, which expire finally on the 31st instant, cannot be ignored and that they should be given an opportunity of participating with shareholders in the benefits which will accrue from the very satisfactory manner in which the mine is opening up.

The difficulty which faces the directors is the low nominal price at which the shares of the company stand in the Share Market, a price at which some of the directors have tested the market, and find that there are few shares on offer, and which is certainly not justified, considering the small capital of the company (£80,030) and the rich asset in the silver lode demonstrated by recent development, not to mention the other important assets of a full mining and machinery plant and equipment and the mining area of 1,600 acres which is fully-paid for

Terms of the Issue.

They have therefore decided to issue debentures for the amount, which may be subscribed, not exceeding £30,000, bearing interest at 10 per cent. per annum, payable half-yearly and redeemable at the end of three years and to give to the lenders the right of option at any time during the currency of the loan, to demand from the company a fully-paid up £1 share in the company for each £1 debenture which they hold. Should this right not be exercised during the currency of the loan the debentures will be redeemed in cash at par upon their expiry. By this means an option-holder who has to-day to relinquish his existing options, is offered the opportunity of acquiring a fresh option for a period of three years for nothing, as the money subscribed for the debentures (bringing in meanwhile, a payment for interest of 10 per cent. per annum) will be returned to him, in full, if he so desires at the expiry of the period. The Directors believe that the right to claim repayment in shares will, long before the expiry of the loan, be a very valuable one. The debentures will be secured by a first bond on the property under the supervision of a trustee.

In addition, there is the most valuable asset of all—the mine:—500 to 700 tons of rich ore already stacked on the surface, together with the ore already developed on first level, all of which is estimated to be of the value of approximately £40,000. It must be remembered that, although only 185 feet of driving, and thus actually proving the reef has been accomplished in depth, the operations carried out since the flotation upon the surface have definitely proved the existence of the lode for a distance of fully 1,000 feet and the values on the surface were as consistently good as those proved below, so that it would not be unreasonable to conclude that the value of the ore so far proved is five or six times as great as that given above. The above assets are those in existence to-day, but it should be borne in mind that the expenditure of the sum now being provided will materially increase the value of these assets. Regarding the value of the silver lead bullion, it was stated by Mr. Errol Hay at the last meeting of the Transvaal Silver and Base Metals, Limited, held on the 8th of December last, that the value of bullion was at that time about £41 per ton. He also stated, in reply to a question, that the cost of production, including realisation, shipping, transport, as well as mining charges was about £21 per ton, of bullion. Since then lead has risen slightly in price.

To sum up the position, the directors state that there is not the slightest doubt that the company holds one of the richest mining concerns in the country, and in subscribing to this issue, shareholders are not only consulting their own interests by making their present shareholdings valuable, but are acquiring the right to secure at par a share which may and probably will be worth more than double that amount before the expiry of the loan. Meanwhile, they are getting 10 per cent. interest on their money. The directors are personally supporting the issue and in their desire to make a success of this company have refrained from drawing management salaries or directors' fees for the last five months.

SCREENING

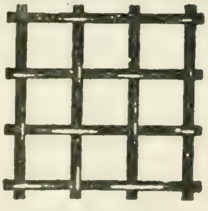
Order No	Gauge	Space. inch.
S2031	20	$\frac{3}{8}$
S2032	18	
S2033	16	
S2034	15	
S2035	14	
S2036	12	
S2037	10	

2½ Mesh, No. 16, Steel.

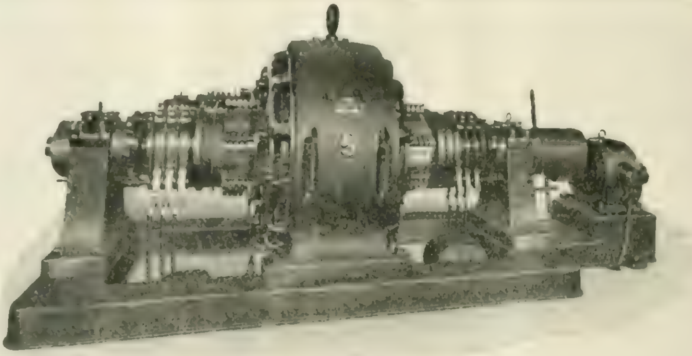
Ask us for quotations for all kinds and sizes of Screening; made in our own factories, and promptly delivered.

The S. A. Wire Co., Ltd.

P.O. Box 651, Durban.



SIEMENS-SCHUCKERT
CONVERTING
PLANT



ROTARIES, MOTOR GENERATORS, CASCADE CONVERTERS (Arnold-Bragstad-Lacour Patents).

Our Works have built over 250,000 k.w. in Rotaries alone.
Take advantage of our unrivalled experience.

SEND YOUR ENQUIRIES TO

C. KLEUDGEN, LTD.,
Corner of LOVEDAY and MARSHALL STREETS, JOHANNESBURG.
P.O. Box 1164. Telegrams: "KLEUDCO." Telephone Central 5435

"HUMBLE" SAFETY
DETACHING HOOK

SOLE AGENTS:
GEO. CRADOCK
AND CO. (S.A.), LTD.
75-77, CULLINAN
BUILDINGS.

P.O. Box 316. Telephone 539.
Tel. Add.: "ROPES."
JOHANNESBURG.

We beg to announce our association with the Ingersoll-Rand Company in the operation of a

NATAL BRANCH OFFICE
SITUATED AT
338a, SMITH STREET,
DURBAN

ROBINS CONVEYORS (S.A.), Ltd.
(Head Office: Robins Conveying Belt Co., New York, U.S.A.)

Conveying & Hoisting Machinery,
Material - Handling Appliances
:: :: and Installations. :: ::

P.O. BOX 4736—TELEPHONE 4182
JOHANNESBURG.
P.O. BOX 811—TELEPHONE 3383
DURBAN.

The South African Mining and Engineering Journal.

HEAD OFFICE: 176-180 Stock Exchange Buildings (2nd Floor), Fox Street, JOHANNESBURG, Union of South Africa.

Telephone **913.** P.O. Boxes **963** and **4573.**

Cables and Telegraphic Address: "MINING JOURNAL"

ANNUAL SUBSCRIPTION RATES: Oversea, £2; Union of South Africa and Rhodesia, £1 10s.; Local Delivery (Town only), £1 6s., payable in advance.

AGENTS FOR GREAT BRITAIN AND AMERICA: Argus South African Newspapers, Ltd., Byron House, 82-85, Fleet Street, London, E.C. 4.

Copies of this Journal are obtainable at all Branches and Agencies of the Central News Agency, Ltd., at all News Agents and Railway Bookstalls throughout South Africa, and at the London Agency as above.

CONTENTS.

PAGE

Our Brighter Prospects of Finding Oil 1429
The Diamond Revival 1431
The Late Major Henry Adams Rogers 1433
The Half-Year's Dividends 1434
West Rand Consolidated Reconstruction 1435
Prospects of Nourse Mines 1437
Working Hours on Transvaal Coal Mines 1439
Pretoria Silver Lead 1441
Topics of the Week 1443
Share Market 1446
Letters to the Editor 1447
Engineering Section:
  Endless Rope Haulage at Modder East 1449
  The Electricity Bill 1450
Matzap Nitrates 1451
Belgian Congo:
  Kilo-Moto Goldfields 1453
Trades and Industries Section:
  The Week in the Mining Material and Engineering Trades 1455
Company Meetings:
  Randfontein Central, Randfontein Estates ... 1459

TOPICS OF THE WEEK.

Provincial Council Imposts.

Undeterred by the ridicule and opposition aroused by its latest taxation proposals, the Executive of the Provincial Council continues to force its mad policy upon the people of the towns. Though the vote on the advertisement tax resulted in a tie, Dr. Reitz, who now stands forth as the sponsor of the tax, has given notice to reintroduce it in some modified form next week. In the absence of Mr. Hadley at the coast and the non-admission of the votes of three members interested in newspapers it would seem that the tax in its new form must go through. The Nationalists and the irreconcilables, Messrs. Hay and Kretchesmar, are bound to vote solid for a measure which is designed to hit at once the much-hated Press, the towns and the newer and more progressive elements of the community. How to counter such a tax, conceived in malice and ignorance and grounded on prejudice, is no easy task, and even the newspapers with all their educational resources seem powerless to combat the forces at work to mulct and punish them. Fortunately in this case, as in that of the employers' tax, there is good ground for an appeal to the veto of the Union Government through the exercise of the prerogative of the Governor General.

Hours on the Coal Mines.

We must confess to a considerable amount of sympathy with Mr. I. Hodges' ingenious but abortive scheme to extend the working hours on the coal mines under his control by making all his men salaried officials. Extracts from the evidence tendered to the Mining Industry Board by Mr. Hodges on the subject appear elsewhere in this issue, and it will be seen that he makes out a strong case for what at first sight appears an indefensible and retrograde step. No one wants men to work ten and a half hours underground in an admittedly dangerous mine no matter what wages are paid. But against this are the facts that the work is entirely of a supervisory nature, that the men themselves cheerfully work the longer shift and that their status of salaried official is much preferred by them. When it came to a vote, however, the men by a majority of one voted against the scheme they had already agreed to, and Mr. Hodges is therefore bound by his own promise to restore the old conditions. Some of the merits of the innovation may be gathered from the following opinion of the manager of the Largo Colliery: "The three shifts of white miners over the two shifts of natives was not a success either from a safety or economical point of view. With miners working 10½ hours they have their own shifts of natives and the natives have their own bosses. This appeals to the native—he is more contented, does his work better and more of it, and realises that having one supervisor only he has someone to appeal to, and he also knows that as soon as his work is finished he can get his ticket marked and go out, whereas on the three-shift system he is sent back to his working-place until the miner gets round to try and find out what work he has done. With the miners working 10½ hours per shift better results are obtained all round. In blasting, for instance, the miner who marks off the holes now blasts them, whereas on the old system one marked the holes and his mate blasted them, which was the cause of a great many holes blowing out and a great many needless holes being put in. The present miners admit that the two-shift system of white miners has a great advantage over the three-shift. By supervising the drilling of the holes and blasting them themselves, and having full control over the loading and tramming boys right to the end of the shift, they get satisfaction. With the two-shift system all the tools are brought to the box at the end of the shift, that is, shovels, picks, spanners and hammers, and the next shift knows exactly where the tools are to be found, thus a quicker start is made at the commencement of each shift. On the other hand, with the three-shift system the tools always had to be looked for, thus causing delay in starting, and as often as not they were left at the face and the coal blasted on top of them. The two-shift system is much safer and more economical, the native likes it better, and there is a better understanding between the management and the men."

Notice of Dismissal and "Lightning Strikes."

Mr. Isaac Hodges, who gave such interesting evidence on other questions before the Mining Industry Board, is also a firm advocate of giving fourteen days' notice on either side instead of the commoner 24 hours' notice. In the course of a statement prepared by Mr. Hodges on the subject he writes: "When, after an absence of twenty years, I returned to South Africa some ten years ago to take up my appointment with Messrs. Lewis & Marks, I was struck with the insecurity of industrial life that still continued in the Transvaal as contrasted with the more settled conditions of Great Britain, particularly with the quent changes made in the management and workmen of the gold mines and the frequency of 'lightning strikes,' and I then discussed the matter with several owners and consulting engineers, only to be surprised to find that they were fairly satisfied with the situation as it stood. Since that time the Witwatersrand gold mines have discovered that the frequent changes in management were very detrimental to the efficiency of the Industry, and a considerable improvement in that respect has resulted, but the evils that ensue from the frequent changes in employment of European workmen and the disastrous effects produced by 'lightning strikes' still remain to be remedied. When the Gold Mining Industry was in its infancy, and a large number of Europeans were engaged on prospecting work with uncertain futures and small financial resources a 24 hours' notice was justified, although in those days I often heard criticisms of such a short period of notice, but it does seem strange that the 24 hours' notice has continued without change from those early days, although in the meantime the Industry has attained such huge dimensions, as a 14 days' notice dominates the industrial life of Great Britain and must have been well known to all the British managers who have been employed here. I contend that the 24 hours' notice is largely responsible for the unrest that has characterised the Transvaal; such short notice is too dangerous a weapon to put in the hands of most human beings—a manager with a man of excitable temper with a grievance, is liable to use the weapon too hastily, with subsequent injury to himself and colleagues and may be trouble and expense to the whole Industry; whereas a 14 days' notice gives time for reflection to manager and workman, owner and union, and with reflection the trouble usually disappears. In my opinion, the industrial life of the Transvaal is too 'nervy' to bear the strain of a 24 hours' notice, and I think the introduction of a 14 days' notice would steady the Industry and make for better relationship and greater regularity of working. I was for fifteen years general manager of one of the largest groups of collieries in Great Britain, and during that period was closely concerned with all the disputes and strikes that occurred in the Midland Counties—in almost every case the 14 days' notice was a definite advantage to both employer and employed, and in the few exceptions in which it could not be claimed to be an advantage it certainly was no disadvantage."

The Retort Courteous!

We have heard a great deal, couched in general terms, lately of the lack of discipline on the mines before the strike, but the following extract from an actual letter to a company secretary from an employee merits placing on record as a human document of rare force and directness:—

"Sir,—In answer to your note of the 2nd, I beg to confirm what I told you verbally on that date—that I do not consider your word worth a d——. Regarding your remark about bringing the question before your directors, I would remind you that you told me the same yarn last year. You seem to forget that you are only a servant of the company and not the owner of the universe. I take the liberty of reminding you of the well-known Biblical parable: 'He that thinketh himself something when he is nothing deceiveth himself.' This is most applicable in your case. I now inform you that I have placed this matter in the hands of the Mine Workers' Union, from whom you will hear at an early date. . . . In conclusion, seeing that I have already given you one quotation from Holy Writ, I cannot do better than close with another, viz.: "And Judas went and hanged himself."—" Go thou and do likewise."

With contempt, yours,

J. G.

Mining Industry Critics.

Variety has been the keynote of the evidence submitted to the Mining Industry Board during the week. Critics, drawn mainly from among the trades union officials who failed to get back their jobs after the strike, appeared to tell the Board how the Industry should be run, and to indicate their dissatisfaction with the managements of the mines and the Chamber of Mines. A close perusal of the evidence fails to reveal anything of a constructive nature, and it would seem that the Board must be getting a little tired of the well-meaning but prolix efforts of would-be industrial reformers. Mr. Bleloch gave what was perhaps the most interesting evidence on the lines he has already made familiar to our readers. Asked about the "methods to be adopted to effect economies," he said his view was that owing to the group system which had grown up, the field for the employment of European labour was restricted; that the financing of the mines had become a monopoly. Consequently there was no competition either in the field of finance or in the field of efficiency. The witness criticised the methods of crushing ore in vogue, which, he said, were 10 years behind. He went on to indicate difficulties created by the Gold Law, which, he said, prevented fixity of tenure. In Mr. Bleloch's opinion the group system was the real primary cause of all the trouble. There was no freedom of competing. Asked by the Chairman to give practical suggestions for improving the Gold Law, the witness referred the Board to his recommendations relative to the gold and company laws. Briefly put, (1) they contended that the present burdens should be taken off the initial stages of mining enterprises; (2) regulations regarding prospecting should be modified; (3) borehole results revealed to the Mines Department under the present law should be published in the *Gazette* as soon as received, for the benefit of the prospector generally; (4) there should be no unnecessary interference with the prospector, and no public condemnation of his work by officials or outside experts who might be ill-informed or incompetent; (5) there should be reform of the Company Law, bringing it into conformity with laws of other countries, so that the ordinary citizen or claimholder was not penalised to his detriment.

The Risks of Mining.

In the course of an interesting address to the shareholders of the Consolidated Mines Selection Co. in mail week, Mr. Walter McDermott had something to say on the risks of mining. There are some people, he said, who, when they hear of annual dividends running into millions, and of great individual fortunes made in South African mining, imagine the existence of something discreditable as compared with other industrial operations; and there are theorists who think a very profitable mine should be disproportionately taxed in some way. These people ignore the risks of the capitalists who develop a country, and increase its wealth by undertaking mining; and their envy of the makers of a few big fortunes leads them to overlook the multitude of small investors. By way of showing how absurd such an attitude is, Mr. McDermott gave a few figures from the history of the group of mines in which the Consolidated Mines Selection Co. has been for so long interested. "We have," he said, "about 5,000 shareholders, mostly small holders, and our operations in active mining go back, in the case of Brakpan, 18 years. The working capital put into that mine was about £1,450,000, and the gold production from 1903, with some other revenues, has been about £11,470,000, while the dividends have aggregated about £2,890,000. So there has been expended in South Africa, and in the purchase of material from England and abroad, and in African taxation, about £10,000,000. That is one successful mine. But we have been interested in the capitalisation and operating of three others—Springs, Daggafontein, and West Springs. These three properties during some years have absorbed about £5,400,000 of working capital, and nearly £5,000,000 of gold produced; and the dividends have been so far only £708,000." In the face of such figures —typical of mining as a whole in South Africa—it is, as Mr. McDermott says, easy to see the absurdity of the claim that while the mines which were losing money should be permitted to utilise labour economically so as to reduce working costs, and so prevent closing down, the richer mines were not to be allowed to make economies in the item of labour. Equally unreasonable, Mr. McDermott contends, is the suggestion that taxation should be relatively higher for those richer mines which yield the reward for the capital risked in supporting the whole Mining Industry.

The Prime Minister and Immigration.

The debate on the Prime Minister's Vote in the Assembly last week gave General Smuts an opportunity of defending his policy against Nationalist attacks. Dealing with the report of the Unemployment Commission, he said the primary recommendation of that report was a great land settlement scheme. He considered that the number of unemployed given in the report was greatly exaggerated. Ever since he had been a member of a Government in South Africa they had been doing nothing but settle poor whites on the land. The solution did not lie in the direction of the Unemployment Commission's report. "Unfortunately," said General Smuts, "in South Africa they were divided not only on political principles, but on fundamental principles." Away from party politics, the question was the weakness of the white population in contrast to the millions of blacks. That was the weakness and was at the root of the poor white question. He referred to what was being done in West Australia, and went on that the immigration policy he was being trounced for was not State-aided immigration, but advertising. "For what purpose?" asked an hon. member. "To attract people," came the prompt reply. He urged hon. members not to depreciate their own country. They wanted capital in South Africa. People with capital were going to Australia and America, but "we have a much better country here." Earnestly, General Smuts said: "There is no country so good as South Africa to live in, but we have too much politics." He referred to wild-cat schemes in London and to the necessity for the presence of Mr. Boshoff to cope with that difficulty. "Any Government which did less than that would not be doing its duty." Instead of all the violent invective they had been receiving, they really deserved the thanks of the Nationalists for their immigration policy. General Smuts dealt with the Free State, where a large percentage of poor whites came from. Concluding, he did not despair that if they went in for an economic, industrial and mining policy they would work through this phase.

Notes & News.

S.A. Alkali.

We understand that the bill dealing with the lease of the S.A. Alkali Company has passed all its stages in the Assembly and Senate, and now only awaits the signature of the Governor-General.

* * *

Diamond Trade Revival.

The "Weekly Dispatch" states that during past month the price of diamonds has increased 25 per cent. for the best stones and 20 per cent. for second quality. This is recognised, it is stated, as the first real movement towards a recovery since the slump that set in during the war. The directors of De Beers Consolidated Mines, Ltd., state that although the demand for diamonds has improved they regret they are not able to declare dividends on either preference or deferred shares.

* * *

S.A.R. Electrification Contracts.

Railway electrification was referred to in the Assembly last week. Preliminary work is now proceeding in connection with the electrification of the Natal main line between Glencoe and Maritzburg. The Minister of Railways informed Mr. Strachan that several contracts were still being negotiated. As soon as the contracts for the whole of the works had been signed it was proposed to publish the names of the contractors. The power station would be located at Colenso if the tests now being conducted proved satisfactory. The question of providing for the carrying out of heavy repairs to the electric locomotives and other equipment was under consideration. Asked whether the contractors intended to import artisans from oversea, and if so, whether the Minister would insist that competent workmen available in the Union would be given the first opportunity of securing employment, Mr. Jagger said the contracts provide that South African labour, skilled and otherwise, shall be utilised wherever practicable.

* * *

Rand Water Board New Issue.

In compliance with Stock Exchange regulations, particulars have been advertised of an issue of £400,000 Five per Cent. Inscribed Rand Water Board Stock, 1932-50, recently placed through private channels. The stock will rank *pari passu* with £3,400,000 Four per Cent. stock issued in London in 1905 and £622,350 Six per Cent. stock issued in South Africa in June, 1920. The proceeds are required for financing the completion of the Vaal River scheme. The work will, it is anticipated, be completed by April 1st next at a total estimated cost of £1,525,000, to meet which loans have already been raised to the extent of £1,287,500. The service of the Rand Water Board's stocks, issued after 1914, is met by direct contributions, payable seven and a half per cent. by the South African Government Railways and Harbour Administration, and ninety-two and a half per cent. in equal shares by the municipalities and gold-producing companies within the Board's area of supply. Debt charges are thereby independent of the water revenue. The present emission is repayable at par on June 1st, 1950, the Water Board having the option to redeem at par in whole or in part at any time after June 1st, 1932, on giving three months' notice.

* * *

Gold and the Exchange.

The steady upward movement in sterling exchange, with its corresponding drop in the price of gold, has aroused considerable interest in the prospects for the immediate future, according to Mr. P. J. Stevenson, the American Trade Commissioner. Since July, 1921, there has been an almost uninterrupted improvement in the position of the pound sterling, measured in terms of the dollar. From 3·6273 dollars on July 15, sterling rose to 4·1775 by December 15, a gain of 55 points, while to date there has been a further gain of over 32 points to 4.50⅝ dollars in the last six months. In the view of exchange authorities, the outstanding feature of the great foreign exchange markets, such as London, in recent months has been the fact that exchange movements have been made in response to economic factors, rather than through sensitiveness to political developments, which clearly shows that international commerce is approaching more sound and normal conditions. It is this reaction to the improving British industrial and financial position, including the Government as well, that has largely forced sterling back to within practically 7.3 per cent. of the normal exchange. It is recognised that it is difficult to forecast the future but, the general opinion in New York is that sterling will remain steady for some time to come. When grain and cotton bills begin to make their appearance, rates may ease off moderately, but violent fluctuations are not anticipated. Just how far the improvement in the British position will counteract the usual downward tendency of the heavy movement in cotton and grains cannot be foreseen, but it is evident that it will be a powerful factor towards maintaining sterling at its present high mark. While the gold mining industry has been adversely affected through losing close to 20 per cent. of its income from gold, the lower landed costs of goods has had a tendency to increase the placing of indents in the United States.

The Week in the Sharemarket.

REFRESHING RETURN OF ACTIVITY—INFLUENCE OF REDUCED COSTS—SATISFACTORY DIVIDEND DECLARATIONS.

The market since our last publication has been most refreshing both to investors and speculators. In spite of the large amount of money required for ex-enemy shares, new business and public buying have been most noticeable, and this feature, though comparatively small in volume at the moment, is being assisted by buying orders from London, thus creating some shortage of floating scrip on this side.

After the recent rise we feel that we shall not be looked upon as pessimistic if we predict a certain amount of profit taking in the near future, but we are of opinion that this will only be temporary, and a slight fall in comparison to the rise will bring forth increased business.

In view of falling costs, it must be borne in mind that even on present prices our good stocks are by no means over-valued. At the same time the question of under-value or over-value depends upon the point of view of the individual as to the amount of interest required upon outlay after allowing for redemption; this latter figure can easily be ascertained with the assistance of a ready reckoner, but the former must be first definitely decided upon.

The mail brings news that early June would see the distribution of some £50,000,000 in dividends. Doubtless we have already felt the effect of a portion of this large sum.

Although the fall in working costs cannot be expected to be as marked for June as for May, in view of the fact that little or no development was done in May, we think we shall not be unduly optimistic in anticipating a comparatively satisfactory fall in this very vital feature of our gold industry.

The rise in the price of gold is pleasing, but must not be taken into consideration when making mining valuations for the future; it should be looked upon as a bonus, or what is better known, perhaps, as "money from home."

The dividend declarations must be greeted by all as most gratifying. The Modder declaration was disappointing to some, but when the question of commission payable in connection with ex-enemy shares is remembered, we think there is little cause for dissatisfaction.

	Fri. 16th.	Sat. 17th.	Mon. 19th.	Tues. 20th.	Wed. 21st.	Thurs 22nd.
Anglo-Amer. Corp.	21 0*	20 10½	20 9*	20 10½	20 10*	21 6
Apex Mines	6 9*	6 9	7 0	6 9*	6 9*	
Aurora Wests	4 0*	4 0*	4 0*	4 0*	—	—
Brakpan Mines	47 0*		47 0*		47 6*	48 6†
Bushveld Tins	0 3*	0 3*	0 4*	0 4*	0 6†	0 3*
Cinderella Cons.	2 5*	2 6*	2 6*	2 6*	2 6*	2 6*
City and Subs.	2 3	2 2*		2 2	2 0*	2 2*
City Deeps	44 0	43 9*	43 9*	44 3*	44 3*	45 0
Con. Diamonds	16 0*	15 9*	15 9*	15 10*	16 0	17 0
Con. Investments	—	—	—	—	26 0*	25
Con. Langlaagtes	—	—	—	—	—	13 0*
Con. Main Reefs	10 1*	10 0*	10 0*	10 0	9 9*	10 0
Con. Mines Select.		13 0*	13 0*		13 0*	14 0*
Coronation Freeholds	0 10*	0 11†	0 11†	—	0 9*	0 9*
Do. Syndicates	4 3*	4 3*	4 6*	4 6*	4 6*	4 6
Crown Diamonds	37 0*	37 0	36 6*	38 9	37 6*	37 9*
Daggafontein Mines	2 10	—	—	—	—	—
E.R. Coals	1 6*	1 6*	1 6*	1 6*	1 6*	1 6*
E.R. Deeps	0 9*	0 9*	0 9*	—	—	—
E.R. Minings			12 0†	12 0†		12 0†
E.R. Props	6 6*	6 6*	6 6*	7 3*	7 0*	7 0*
Eastern Golds	—	—	—	—	0 7†	0 7†
Ferreira Deeps		80 0†				
Frank Smith Dmds	4 0	3 11*	3 11*	3 11*	3 10*	3 10*
Geduld Props.	58 6*	58 6*	58 6*	59 6	59 3*	60 6
Geldenhuis Deeps	—	—	—	—	—	4 6*
Glynn's Lydenburgs		17 0†		16 0†	16 0†	
Govt. Areas	94 6*	94 6	94 3*	96 3	97 6	99 3
Hume Pipes	16 0†		15 0	16 0†		14 3*
Knight Centrals	3 10	3 9*	3 10*	3 10*	3 10*	3 10*
Lace Props.	7 10*		8 1			8 0*
Leeuwpoort Tins	5 3*	5 3*	5 0*	5 0	4 9*	5 0*
Luipaardsvlei Est.	2 6*	2 6*	2 6*		2 6*	2 6*
Lydenburg Farms	5 9*	5 9*	5 9*	5 9*	5 9*	6 0
Middelvlei Est.	1 3*		1 4*	1 8*	1 3*	1 4*
Modder Wests	1 0†		1 0†	1 0†	1 0†	1 0†

	Fri. 16th.	Sat. 17th.	Mon. 19th.	Tues. 20th.	Wed. 21st.	Thurs. 22nd.
Modder B's	31 0*	31 0	31 6	32 6	32 9	33 3
Modder Deeps	44 0*	44 4	44 6	44 9	44 6	44 9
Modder Easts	7 9*	7 8*	7 0*	7 9*	8 0	8 3
Natal Navig. Colls	32 0†	32 0†	32 0†	30 0*	30 0*	31 0*
National Banks		217 6	217 6†	218 9		
New Eland Dmds	32 6*	30 0*	30 0*	32 6*	32 6*	31 6*
New Era Cons	6 0*	6 0*	6 0*	6 0*	6 0*	6 0*
New Geduld Deep	1 6*	1 6*	1 6*	—	—	—
New Kleinfonteins	6 0*	6 0*	6 0*	5 9*	5 9*	5 9*
New Modders	74 0	75 6	76 0*	75 9	75 9	76 0
New Primrose	5 3*	—	—	—	—	—
New Unifieds	4 9†	4 9†	4 9†	4 9†	4 9†	4 9†
New State Areas	33 0	32 6	32 3*	32 6*	32 6	32 9
Nigels	5 0*	5 0*	5 0*	5 6*	5 6*	—
Nourse Mines	15 6*	15 6*	15 10½	16 6	16 6	16 6½
Pretoria Cements	44 6	44 9	44 0*	43 0*	43 0*	43 0
Rand Collieries	—	—	0 9*	—	—	1 3†
Rand Nucleus	—	—	—	1 1*	1 1*	—
Randfontein Cent	10 0*	10 0*	10 0*	10 0*	10 0*	10 0*
Do. Estates	17 1*	17 6	17 4*	17 9*	17 9*	17 4½
Rouxville Dmds	1 4*	1 5*	1 6	1 9	1 9	1 4*
Robert Victors	8 0*	8 0*	7 10*	8 0*	8 0*	8 0*
Ryan Nigels	3 0*	3 0*	3 0*	—	3 0*	3 0*
Simmer and Jacks	3 1	3 0*	3 2*	3 2*	3 2*	3 3*
S.A. Lands	4 3*	4 3*		4 3*	4 3*	4 3*
Springs Mines	44 0*	44 9	44 6*	44 9†	44 9†	44 4½
Sub Nigels	11 6*	11 6*	11 6*	11 7½*	11 7½*	12 0*
Swaziland Tins	5 0*	5 0*	5 0*	6 0†	6 0†	5 6
S.A. Alkali	15 9	15 3*	17 0	17 6	17 6	17 0
S.A. Townships	9 3*	9 3*	9 3*	9 3*	9 3*	9 3*
Transvaal Lands	—	—	—	—	—	18 0†
Do. G.M. Estates	11 6†	11 0	11 6†	10 6†	10 6*	11 9
Do. Silvers	14 0	13 9*	14 0	14 0*	14 0*	14 0
Tudors	0 9†	0 8†	—	—	—	0 8†
Van Dyks	0 9*	0 9*	1 0	0 10*	0 10*	1 0†
Van Ryn Deeps	69 6*	69 9*	70 0	69 6*	69 6*	69 3*
Village Deeps	10 6*	10 0			—	10 9*
West Springs	10 1*	10 3	10 6	10 6	10 6	10 3*
West Rand Cons.	4 6*	—	—	—	—	4 6*
Western Rand Est.	4 0†	4 0†	4 0†	3 9*	3 9*	3 9*
Witbank Collieries	40 0†	40 0†	39 6*	39 6*	39 6*	39 6*
Witwatersrands	—	—	—	13 0*	13 0*	13 0*
Wit Deeps	10 0	10 0*	10 3*	10 0*	10 0*	10 3*
Zaaiplaats Tins	2 0*	2 1*	2 2*	2 2*	2 2*	2 2*
Union 5 per cent.	£100*	£101*	£101*	£101½*	£101½*	£101½*

* Buyers. † Sellers. a. Odd lots. b. Ex London.

Liquidation Dividends.

Liquidation dividends are announced by the Glencairn (1s. 4d. final), the Princess Estate (1s. 2d., first distribution), and the New Heriot (1s. 6d. final).

The African Oil Corporation, Ltd.

The Consulting Engineer of the company reports that No. 6 borehole reached oil shale at about 200 feet. The results of the tests are as follow:—Top seam, 22 gallons per short ton over 19 inches; bottom seam, 15 gallons over 11 inches; No. 7 borehole has not yet been completed.

MINES DEPT. EXAMS.
CERTIFICATES AWARDED INSTITUTE.

MANAGERS' EXAMS., September, 1921, January, 1922.

We obtained 15 out of a total 22 certificates awarded in South Africa

	Metal	Coal	Totals
Ours	9	6	15
Rest of S A.	4	3	7
		Total for S.A.	22

OVERSEERS' CERTIFICATES.

During the past ten months we have secured **ALL** the Overseers' Certificates issued in South Africa, except 3 metal and 3 coal.

TUITION (Metal or Coal) by class, correspondence or privately

Mining Institute (Prof. Yates),
St. James' Mansions, Eloff St. Johannesburg

Letters to the Editor.

OIL ENTERPRISES: A QUERY.

To the Editor, *S.A. Mining and Engineering Journal.*

Sir,—I would esteem it a great favour if you could please insert this letter in your Journal.

My object is to ascertain what is the present position regarding the prospects of Wakkerstroom Oil Shales and the African Oil Corporation. Especially in regard to the former, it is next door to impossibility almost to get any reliable information from the Board, and as I am a considerable holder in both companies, purchases made near top prices, I am anxious to know whether there is any chance of retrieving a portion of the money invested (there having been no Exchange quotation for a long period), and to attain this object it seems to me that a little publicity would be of advantage to the general public who was induced to put money into the ventures.

Thanking you in anticipation,

Yours faithfully,

"DISSATISFIED."

CORNISH MINERS.

To the Editor, *S.A. Mining and Engineering Journal.*

Sir,—I have just been reading your issue of the 22nd April, and was particularly interested in the remarks which you have made under the above heading. I hold no brief for "Cousin Jack," but if two or three thousand of his kind were on the Rand to-day there would be an immediate increase in efficiency and a more healthy atmosphere throughout South Africa generally. I do not know Mr. Munnik and do not want to know him. After all, if it had not been for the "Cousin Jacks," who really brought the mining industry to where it is to-day, Mr. Munnik would not have his present job and South Africa would have been little more than a geographical expression.

Cornishmen are no more virtuous than any other set of men, but they do know mining and, as you yourself say in other words, they did not stab us in the back when we were otherwise engaged. All throughout the war there was not a single industrial dispute in Cornwall. The old men did the work and the young men joined up. There is to-day scarcely a single mining household which has not had either direct or indirect contact with South Africa, and those whose memories can carry them back a few years know what a tragedy that has been. Thousands of Cornishmen have died through the insidious effects of "silicosis," which we are only now beginning to understand. Literally speaking, they died that the mines might live. If Mr. Munnik, therefore, had one atom of gratitude in his body he would not have spoken of these "old timers" except with deep respect.

I am, however, straying away from the point upon which I wished to address you and, through you, the mining community. I have just returned from a week's tour in the Cornish mining districts, and the destitution there is terrible. I suppose that about one miner out of ten is at work, and those who are fortunate enough to be in this position are drawing about 42s. per week, equal to about 21s. pre-war. In spite of this, there is not a murmur of dissatisfaction, and the head constable of the county has himself raised £10,000 to alleviate the distress. This speaks for itself. With all this the unemployed and their wives and children look clean and respectable. They have not lost their self-respect, nor are they likely to do so. How they eke out an existence I do not know, but they manage.

Now I know Johannesburg has done a lot to help the Cornish miner both collectively and individually. People in Cornwall have told me so, and in telling me spoke in terms of deepest gratitude. I know, too, that Johannesburg is having its own bad times just now, and therefore I make no appeal of any kind, but as some people don't believe there is great destitution in Cornwall I thought it would be well to put on record the opinion of an independent observer, such as I think I am. I have seen in Camborne alone within the last few days about 500 unemployed miners, and until tin takes a decided upward turn, which prospect seems rather remote, there is little hope for them.

Yours faithfully,

WM. CULLEN.

The Crossways, Avenue Elmers, Surbiton.
Surrey, 30th May, 1922.

VAAL RIVER DIAMONDS.

"The Vaal River is far more valuable than the Johannesburg gold reef, because here there is an everlasting supply of something more precious than gold. If provision is to be made to protect Kimberley from future depression and to protect the enormous number of people living on the diamond diggings, which are bound to go eventually—if something is to take their place—I ask you whether you can find anything better than irrigation from the Vaal River." This is from a speech of the Kimberley City Engineer, Mr. F. Walton Jameson, at a meeting of riparian owners to further consider the vitally important problem of the development by irrigation of the potentially fertile and productive area from Fourteen Streams to Barkly West.

OSBORN'S
"TITAN"
MANGANESE
STEEL CASTINGS
FOR
ROTARY AND JAW CRUSHERS,
MORTAR BOX LINERS, ETC.,
AND FOR ALL PARTS SUBJECT
TO SEVERE ABRASION.

GET THE ABSOLUTE BEST
AT NO EXTRA COST.
FROM
SAMUEL OSBORN
(S.A.), LTD.
BOX 3162 PHONE 4673
JOHANNESBURG
WORKS: CLYDE STEEL WORKS, SHEFFIELD.

REGD TRADE MARK

Complete Electrical Equipments for Every Requirement

THE B.G.E.C. Products are manufactured in the many factories of the G.E.C., England, each factory specialising in its own particular type of apparatus.

The advantage of placing their contracts with a firm which manufactures within its own organisation everything requisite for complete electrical installations must appeal to all Engineers and Promoters of large engineering schemes.

Your Enquiries Invited
in Connection with
Electrical Plant for
every service.

The British General Electric Co. Ltd.

Representing The General Electric Co., Ltd., of Eng.

Head Office :—
Johannesburg
Corner Loveday and Anderson Streets
Box 2406 Phone 4242 3 Tel. : "Current"

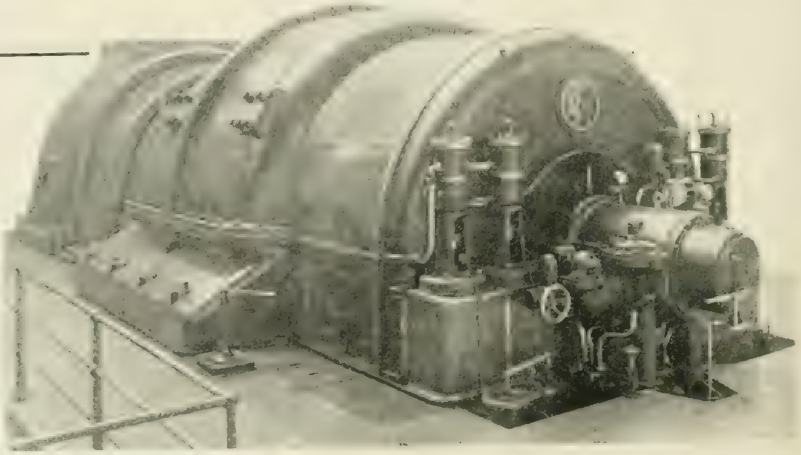
Capetown
83-85 Castle St.
Box —— 1327
Phone — 1401-2
Tel. 'Induction'

Durban
56 Field Street
Box —— 922
Phone — 1793
Tel.—'Ampere'

Agents at—Port Elizabeth, East London, Maritzburg, Bulawayo, Delagoa Bay, Beira, Dar-es-Salam, Tenga, Zanzibar, Mombasa, Nairobi, Uganda. Etc.

Some B.G.E.C. Products.

1. Steam Turbines.
2. Turbo-Compressors.
3. Turbo-Blowers.
4. Turbo-Alternators.
5. Geared A.C. & D.C. Generators.
6. Generators A.C, and D.C.
7. Rotary Converters.
8. Motor Generators.
9. Phase Advancers.
10. Motors A.C. & D.C.
11. Motor Control Gear.
12. Switch Boards.
13. Industrial Switch Gear.
14. Instruments.
15. Wires and Cables.
16. Telephone Apparatus.
17. Portable Electric Tools.
18. Lifting Magnets.
19. Passenger and Goods Lifts.
20. Electro-Medical Apparatus.
21. Magnetos.
22. Lighting Fittings and Accessories.
23. Osram Lamps: Vacuum and Gas filled.



ENGINEERING SECTION.

Endless Rope Haulage at Modder East.

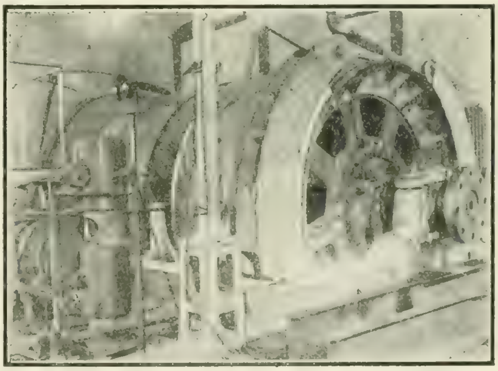
SIMPLE CHAIN ATTACHMENT—COAL MINING PRACTICE FOLLOWED.

Before a recent meeting of the C. M. and M. Society, Mr. J. Chilton read an interesting paper on the endless rope haulage system at the Modder East. The following is an extract from the paper :—

At the Modder East it was decided to put in the chain grip attachment. This method of fastening is probably the simplest that could be employed, and where there is a steady and even pull against the load it cannot be surpassed. Subsequent events have shown the wisdom of this choice, for neither with the full nor the empty car has trouble been experienced due to slipping. The chains are attached to the front of the full car, and to the back of the empty. They are about ten feet in length with three-eighth links, and have a hook at each end. One hook is attached to the draw bar of the truck, then the chain is wound a few times round the rope and hooked back upon itself. One of the chief merits of this method of fastening is that the pull is on the draw bar, low down, and in the centre of the road, thus avoiding the side wear on the wheels, which is so marked a feature in some forms of endless rope haulages. The grip is also self-tightening and does not damage the rope. When the chain grip was under consideration it was recognised that there might be some trouble due to the twisting of the rope if great care was not exercised in splicing the ends, but this drawback was successfully overcome, and after the first few cars were drawn up no further trouble was experienced from this source. Although there are two curves in the haulage, the chains and hooks pass round the sheaves without difficulty. The breaking strain of the chain is about three tons, and should a truck become derailed the chain breaks, thus avoiding damage to the rope. The diameter of the rope is seven-eighths of an inch, and it travels over the tracks at the rate of two miles per hour. The attaching and detaching of the trucks at the three landings is done without interfering with the speed of the rope.

The haulage engine is driven by a 236 h.p. motor. This gives enough power for present day use and admits of further extension of the haulage should this be desirable. There is sufficient brake power on the engine to stop the haulage in ten feet in the event of derailment of cars or other accident. The rope passes three times round the slightly-coned drum; this gives sufficient friction to prevent slipping, while it allows a twisting movement in the coils. Trip switches are fitted to guard against overloading and consequent damage to motor.

On the haulage way there are four landings or points where trucks are fastened on and taken off. The main station is on the 19th level, and it is at this point that all trucks are dealt with. The track from the bank head to the tipplers has a 3 per cent. grade, and trucks released from the rope run out by gravity. Empties return to the hanging-on point by the same means. The landing at the 20th level is laid with a turn-out left and right, trucks proceeding south pass along a drive under the haulage. Empty cars are detached on one side, and full cars are connected up on the other. Switches are laid from the main track and, when necessary, a car is switched in, unhooked, and sent in the desired direction. A slight twist and a shake is sufficient to release the grip on the rope, and one native is all that is necessary to deal with the empties. On the opposite side of the track two natives attach the loaded cars. On the 21st level there is only one drive on the south side of the haulage way, so a somewhat different arrangement was necessary. Empties required at this station are switched out and move over a bridge which spans the main tracks, passing along to the siding about 200 feet distant. At both stations the full track is slightly dished to allow the loaded cars to pass under the rope, when attachment is easy. Ore from the 22nd level is dropped through a vertical winze to a lower level and is loaded up from a footwall crosscut and attached to the rope at the 23rd landing. Empties required in the north drives are switched in that direction, the remainder pass along to the main landing, where they are detached from the rope. It will be noticed from the sketch given that there is a slight depression and deviation of the full track near the top. This was found necessary in order to remove the weight of the rope from the car when passing over the bend from the slope into the level landing. The curves on the haulage way are fitted with white iron pulleys, the lower flanges of which hold up the rope so that chains and hooks pass round without knocking or excessive friction.



New Hoist: North Vertical Shaft, Randfontein.

Trucks loaded with timber, drills and other mining material pass freely up and down the haulage. When loading up explosives special precautions are necessary. The truck containing explosives is first fastened on to the rope, and about ten feet behind the guard truck is connected up. This acts as a buffer should a car be accidently detached after passing over the runaway switch. Fortunately this [illegible] happen. Special trucks for carrying men are in use. These are fitted with [illegible] and a safety [illegible]. The truck [illegible] [illegible] [illegible] [illegible] [illegible] [illegible].

Trucks are attached to the rope at [illegible]. The lowest [illegible] spaces the cars every 80 feet, the next station attaches a truck between these, and the upper landing again divides this distance, so that the trucks reach the top about 20 feet apart. With this interval between [illegible] the attaching of the [illegible] accomplished. Sometimes cars are sent up with only the length of the attachment chain between them: this is bad practice, but it [illegible] to the natives employed [illegible]. The capacity of the haulage is about 1,000 tons in [illegible] hours. This figure has not yet been reached, but 90 trucks per hour has been accomplished over a consecutive period of six hours, and there is little doubt that with greater experience and larger supplies of ore the desired tonnage could be easily dealt with.

The successful working of any endless rope haulage system is governed to a great extent by the arrangements for taking in slack rope, and keeping sufficient tension to prevent slipping on the driving pulley or drum. Ropes stretch with use, and the weight of the load varies. The grip on the driving wheels slackens or tightens according to the position of the cars on a haulage way of varying grades, so that some method of keeping an even tension on the rope must be employed. On this system, the tension weight is at the lowest point in the haulage and consists of a loaded bucket containing about three tons of scrap iron. This moves between pulleys, and its average travel is less than 12 inches. To prevent violent surges due to serious accidents on the haulage, the balance weight itself is fitted with anchoring ropes which allow of a small movement beyond the ordinary travel of the tension weight. The haulage is laid with 30 lb. rails in 30 ft. lengths with fish-plated joints, and a 2 ft. 6 in. gauge. It was originally laid with steel sleepers, but these were found to be unsuitable, and have been replaced by wooden ones.

Trucks Used.

The trucks used are the standard Rand Mines iron truck, with a carrying capacity of one ton. They are fitted with Rowbotham wheels, have a wide wheel base and substantial draw bar, and the centre of gravity is low so that derailments are reduced to a minimum.

Though the trucks on the haulage system only move at a very low speed, safety measures and appliances have not been overlooked. To guard against the possible danger of run-away cars various devices such as cut-outs, run-away switches, and kick-ups were installed. The haulage way is lighted up from end to end and a roped-off travelling way has been made by the side of the empty track, and electric bells and telephones are in use at every landing. The immunity from accident which the haulage has so far experienced testifies to the effectiveness of these safety measures.

The system at the Modder East has not been long enough in operation to enable a close estimate of costs to be made. The life of the rope has not yet been ascertained, neither has the system been run to its full capacity, but the saving on the previous method is most marked, both power and labour showing considerable reduction. In working the haulage only 14 natives and one European are employed. After allowing a reasonable interest on the capital expended, the cost per ton mile does not exceed 3·1d. Ordinary lashing and tramming on most East Rand mines probably averages about 50d. per ton mile. The endless rope haulage costs on two neighbouring mines average 6·8d. over this distance, but it is only fair to admit that the capital charges in these cases were very high, as special haulage drives were necessary to deal with the tonnage required.

The Electricity Bill.

LESSONS FROM AMERICA.

The following extract from the *Engineering News Record* of New York is of special interest in view of the deliberations of the Select Committee on the Electricity Bill:—

Next November the citizens of California have to decide whether they want to plunge headlong into the most stupendous experiment in State Socialism this country has ever seen. The majority of those voting can pledge the resources of the State to the amount of 5,000,000,000 dollars to be expended by five appointees of the Government in any way they think "necessary or convenient for the conservation, development, storage and distribution of water, and the generation, transmission and distribution of electric energy." There would be no preliminary trial, no study by authorised experts, no legislative or gubernatorial veto. By virtue of the initiative law the proposed constitutional amendment, if adopted, is self-executing.

Pyramiding Expenses.

There will be those who seek to prevent so extraordinary and, we think, so dangerous a step by shrieks of "Socialism" and "Look at Russia." That will not do much good. But the people of California, who by the curious development of ultra-democracy must now decide this intricate economic question, may as well be confronted with what the adoption of the amendment would entail. They might be asked to look at Ontario, the only other North American State which conducts a hydro-electric business, and see there the pyramiding expenses which have just led a hitherto friendly Government to appoint a Royal Commission to study into a Frankenstein Power Commission which threatens to absorb the province which created it. They might well study their fellow-State of North Dakota, led by visions of successful State ownership into near bankruptcy to be saved only by a recall of its radical leaders and a reversion to policy. They may, indeed, be asked to remember the federal adventure in the business of running the railroads, with all the disasters of subservience to labour and overwhelming deficits. And, finally, they may think of the federal post-War operation of ships. These are actual experiments in what California would so hastily try. Do any of them warrant a great State sailing off so lightly into an uncharted political and economic sea?

Punishing the Taxpayer.

Possibly the public utilities of California have not been perfect in their attitude to the people. They are very large and very powerful, and power breeds over-confidence. But the people of California will not be punishing these utilities by voting to take them over. The public utility business is not so profitable but that its owners could well afford to take the full value the State is obliged to pay for their property and go into some other business with more profit. The ones who will be punished are the taxpayers, who will have to pay for the property, and who will have to stand by and see an ungoverned Commission wield the resources of the entire State. California has since its earliest days been the home of private initiative. It would mark a decided change in the temper of its people if it were next November to become the first of our American Commonwealths to go into the business of marketing water and power. Hazardous as the experiment is, it may, if attempted, have one good result—to serve as a warning to other States on what not to do. That, though, would be poor consolation to the victims—the people or the industries, or both, of California.

Matzap Nitrates.

PROBLEM OF THE SALT PAN.

Mr H. O K Webber contributes to the *Journal of Industries* an important article on "The Problem of the Salt Pan: an Account of the Conditions at the Matzap Pan in the Cape Province." We quote a few passages from Mr. Webber's article. He writes:—

For many years the deposits of potassium nitrate visible in the sheltered ledges of the rocks in the Prieska and Hay Districts of the Cape Province have been in evidence. Their probable origin has been most exhaustively investigated by Mr. A. L. Hall, F.G.S., of the South African Geological Survey. He deals with the origin of the nitrogen, and puts forward the suggestion that the potassium, probably an original constituent of the Lower Griquatown Series, passed through the carbonate into the nitrate combination in the presence of nitric acid. All attempts made so far to collect the nitrates from these ledges and market them on a commercial scale have failed. However, the presence of these deposits, saved in crevices from destruction or removal, suggests that there existed for a vast number of years conditions most favourable to the manufacture of nitric acid by bacteriological action upon vegetable and even animal matter, and least favourable to denitrification. That is to say, conditions favourable to nitrification must for ages have preponderated over those favourable to denitrification. It is the boreholes lately put down within the area of, and near the Matzap Pan which demonstrate what has happened to some of the nitrates originally formed in the surface soil during perhaps thousands of years. These boring operations disclose the existence of underground brine-carrying beds, which appear to be extensive. The country is flat in the neighbourhood of Matzap, the fall from the north-east towards the "pan" being very slight. The "pan" was first officially noticed in 1905 by Dr. A. W. Rogers, of the Geological Survey, as recorded in the Tenth Annual Report of the Survey (1906). Dr. Rogers describes attempts made, by the then owner of the farm, to evaporate brine drawn from the "pan" in a rough open tank. He says that some salts had been pitched out of the mother liquor on to the ground, where they had dried in the sun. These mixed salts consisted of NaCl (common salt), $MgSO_4$ (epsom salts), and KNO_3 (saltpetre), with a little gypsum, whilst the mother liquor which was thrown away consisted mostly of $MgCl_2$ (magnesium chloride), and probably some nitrates still not crystallised. All samples of brine were bottled just as they came from the pump. The engineer in charge of the work, Mr. J. C. Beynon, mining engineer, of Johannesburg, reported as follows: "My belief is that it is the substrata that carry the brine, that this condition extends for miles north and south, and that the brine percolates towards the 'pan.' A farm to the north twelve to fifteen miles from the 'pan,' I know, carries the brine in a well. Another eight miles to the south also has found the brine in a hole, the nitrates becoming stronger at depth." In considering the Matzap Pan, the points of interest are the following: (1) That the upper bed of sandy clay, approximately 16 ft. thick, is saturated with nitrate-bearing brine, containing an aggregate heavy tonnage of valuable salts, and also that the specific gravity of this brine does not appear to vary in consequence of the surface of the "pan" being flooded, provided the surface water is excluded from the sump. (2) That the water of a small perennial spring, which trickles into the "pan" on the north-east side, contains a small quantity of nitrates. (3) That the analysis of the soil near the surface of the "pan," taken as dry as possible, shows the presence of from 1 to 2 per cent. of nitrates. (4) That one would assume that under the fierce rays of the sun and drying winds for eight rainless months every year, when the surface of the "pan" has become dry, the specific gravity of the upper brine would be greater than that of the lower brine. (5) That, on the contrary, the brine found at depth over the whole area of the "pan," below the layer of dry shaley clay, is much more highly concentrated, and from the tests recorded above contains between 4 and 5$\frac{3}{4}$ tons of nitrates calculated to KNO_3 per 20,000 gallons of brine, lying where, one would think, no external influence inducing concentration can be brought to bear on it. This would indicate that this underground brine represents a store of uncertain extent and of uncertain age. It also points, in the opinion of Mr. Beynon, quoted above, to the probability of a slow underground flow of brine towards the "pan." This may be a movement of accumulations, and they in turn may be replenished by slow percolation and diffusion. Moreover, the writer has no reason to doubt the statements made to him to the effect that the water found in wells, especially on the watershed, which is flat but very large, is found to be nitrate-bearing at varying depth. In considering the quantity of brine that could be pumped daily, one can only point to the large quantity of brine which is pumped daily from below the dry salt pans of the western parts of the Union. No solution is offered to the problem of the source of these underground supplies of brine, which seem to have means of replenishment. Those who have put up pumping plants on salt pans for raising the brine from boreholes, and also expensive evaporating plants, appear to have no qualms about the permanency of the supplies. For instance, at the Britten Saltpan in the western Transvaal only a fraction of the "pan" is so far worked. In spite of this, about 250,000 gallons of brine are pumped daily from about twenty boreholes, mostly about 70 ft. deep, a few being 200 ft. deep, without cessation or signs of diminution. The expression "stagnant lake" has been applied by experts in Europe to our South African "pans." They complain that little has been written on the question of the existence and source of these underground reservoirs of brine, their means of replenishment if any, and the constancy of yield, from boreholes sunk to a comparatively shallow depth within the "pan" areas. In this regard it would not be amiss to quote the words of Professor Rindl, when he says: "Whilst some work has been done on the origin of 'pans,' very little interest has been bestowed on the origin of the salts they contain and the variability in composition of the mixtures of salts in different 'pans.' The problem deserves immediate and careful attention, not only on account of its bearing on the salt industry, but also on account of the light it is likely to shed on the problem of 'brak.'"

Phones 44 and 548 Germiston. **Railway Siding No. 19**
Telegrams: "FOUNDRY," Germiston.

East Rand Engineering Co., Ltd.,
New Industrial Sites,
—GERMISTON.—

General Engineers.
Iron and Brass Founders. *Machine Moulding.*

HADFIELDS LTD.

Workmen Employed during the war, 15,000.

East Hecla and Hecla Works, SHEFFIELD, England.

Works area over 200 acres.

Head Office for South Africa:
46-47, CULLINAN BUILDINGS,
JOHANNESBURG.
Phone 5900. Box 1009.
Tel. Add.: "Hecla."
STORES: Denver, Transvaal
(Adjoining Denver Station)

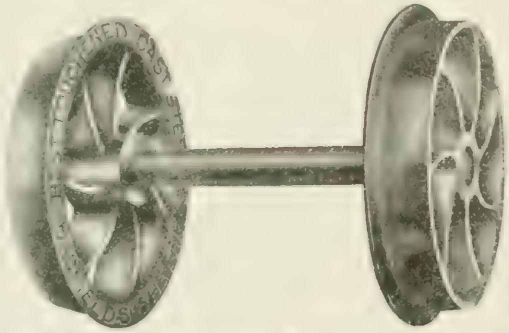
Bulawayo Agents:
WHITMORE & JACKSON,
17 & 18, Agency Chambers.

Salisbury Agents:
P. PEECH & CO.,
Angwa Street.

Natal Agents:
THOS. BARLOW & SONS
(S.A.) Ltd.,
Smith Street, Durban

Steel Skip & Wagon Wheels

WITH AXLES AND BEARINGS.



Hadfield's Special
Lock-fast method
of fitting
prevents any possibility
of the wheels working loose
under the most severe conditions.

MAKERS OF THE BEST KINDS OF

Stone Breaking and Ore Crushing Machinery

SPECIALITY: IMPROVED 'HECLON' ROCK & ORE BREAKER.

MINING REQUISITES

Shoes, Dies, Balls, Grizzley Bars, Crushing Rolls, Jaw Faces, Concaves, etc.

STEEL CASTINGS AND FORGINGS OF ALL DESCRIPTIONS.

SOLE MAKERS OF HADFIELD'S PATENT

ERA
Trade Mark

Manganese Steel

THE SUPREME MATERIAL

for the Wearing Parts of Stone Breaking and Ore Crushing Machinery, etc.

BELGIAN CONGO.

KILO-MOTO GOLDFIELDS.

Mines Described.

In an article published by the current *Revue Universelle des Mines* (Liège), Mr. Raymond Anthoine gives some valuable information concerning these State-owned goldfields of the North-East Congo. It was in 1903 that prospectors, sent by the Congo Free State, discovered alluvial gold in the tributaries of the Ituri and in the north-eastern part of the Congo, near Irumu. In July, 1905, the working of these discoveries was started at the Ituri, otherwise termed Kilo, goldfields. At the end of 1911 was started the working of the gold alluvials discovered in an Uélé tributary (the Uélé or Moto goldfields). Since the beginning of their working (1905) up to the end of 1921 the Kilo-Moto goldfields produced 28,786 kilograms 587 grammes of gold, which were sold for 132,718,126 francs. Since June, 1920, reef gold has also been produced at Nizi (Kilo). The amount produced is included in the above figures.

Primitive Methods.

Mr. Anthoine states that at the Kilo-Moto goldfields primitive means of producing alluvial gold (hollowing by means of picks, bringing the alluvial ground to the sluices in wheelbarrows made on the spot, supplying water to the longtoms and sluices by barrages) are better and cheaper than the mechanical process, and this on account of the cheapness of native labour, of the price of the mechanical plant, and of the difficulties of transporting it, and also on account of the fact that the plant would always have to be removed—a very difficult job. The absence of coal, the high cost of liquid fuel, the irregularity in the supply of wood as fuel, and the dfficultes of havng a mechanical plant manned by natives are further reasons given by Mr. Anthoine to claim that at the Kilo-Moto goldfields primitive processes are better and cheaper. Accordingly, he states that a mechanical plant is only justified on greater fields and when it is impossible to otherwise produce gold. The mean yield in 1920 was 3 grammes 5 of gold per cubic metre at Kilo and 1 gramme 70 at Moto. At Moto, last year, a claim, sluice-worked, yielded 0·6 gramme per cubic metre (and yet was worked with profit—a world's record, according to a Parliamentary report recently issued).

Reef Gold.

Gold reefs have been discovered both in the Kilo and in the Moto districts, and one of them is being worked in the Kilo country. The best known reef is Reef "D" of the Nizi Division (Kilo country). There 50,000 tons of ores yielding 20·05 grammes per ton have been ascertained. They can mostly be treated by amalgamation. From June, 1920 (in) to January, 1922 (in), 12,636 tons of quartz from that reef have been crushed, producing 259 kilogrammes 350 grammes of gold (mean yield, 20·05 grammes of gold per ton of ore crushed). At the Reefs "A" and "B" of the Nizi Division 10,000 tons of free-milling ore have already been ascertained. Their mean yield is 25 grammes per ton. This ore will be treated by amalgamation with the ore of Reef "D." The Tsi Mountain, on the left bank of the Nizi River, is a real nest of reefs. There 27 reefs have been discovered. They are about to be carefully studied. The Tsi Mountain is five kilometres from the actual mills. The laboratory of the Nizi Division has started working in December last. At the Shari Division 10 reefs have been discovered during the last year. Successful works have also been started at Munt Senghe, near New Kilo, and on the tributaries of the Mongbwalu. Several reefs there discovered contain visible gold. In 1921 prospecting to discover reefs was started at Moto (Uélé basin). In the Uélé the local conditions for the working are less favourable than in the Ituri. Indeed, in the Uélé the working of the reefs will require shafts and galleries. The Miro Reef, in the Watsa Division (Uélé Mines), has been found in surface outcrop over a length of 200 metres. Its outcrops yield up to 129 grammes of gold per ton. A crushing mill will be erected to treat the ores of that reef, and the 1,500 tons of tailings resulting from the disintegration on the spot of the head of the Miro reef. The mean yield of these tailings is 15 grammes per ton. At the Moku Division six reefs are being studied. The crushing mill above referred to will treat the quartz from these six reefs. From what is known at the time being, one could not rely, in the Uélé country, upon as many and as rich reefs as in the Ituri country. But, as this is only a probability, the prospecting will be still carried out.

THE NEW RAILWAY PROGRAMME.

The Railways and Harbours Board has submitted to Parliament its recommendations regarding the construction of the proposed lines of railway upon which the Government has asked it to report. The construction programme has for its objects not only the development of districts already producing large quantities of agricultural products, but also of those where progress is being impeded by the absence of adequate means of transport for conveying the produce to markets.

As the proposed lines will be built mainly for development of the agricultural resources of the districts concerned, a policy of building what are known as "pioneer railways" has been adopted. Construction of this type of line will be of the very plainest and cheapest nature compatible with safe working and the amount of traffic likely to be dealt with. Second-hand materials will be used wherever possible, and stations, station buildings, platforms, quarters for staff and other incidentals will be cut down to the bare minimum of requirement. As the effect of the railway becomes apparent in the districts concerned and as the traffic requirements increase, so will the standard of the lines be bettered, thereby keeping pace with development at a minimum of cost.

By the above means it is hoped to counteract to some extent the considerable advance in the cost of constructing railways, including the rate of interest payable on capital which, for the 1913 programme, was 3½ per cent. as compared with 5 per cent.—the rate applied in calculating the estimates in respect of the lines figuring in the present programme.

Mining Syndicates and Small Mines can Reduce their Working Costs by installing
"A LANE SLOW SPEED CHILIAN MILL."
For particulars apply :
J. P. ENGEL, P.O. BOX 2582, JOHANNESBURG.
'PHONE 1621'

CLIMAX DRILLS

A Speed Contest and the Joburg III.

IN one of the many Mines where Climax Drills are in use the Joburg III was doing good work.

But somebody came along with another drill, and claimed for it that it would work 50% faster than any drill in the mine.

So it was set to work alongside the Joburg III . . . and this is what happened:—

Somebody's Drill did 6 holes in 5 hours.
The Joburg III did 7 holes in 4½ hours.

The conditions were identical—but Joburg III was a *better* drill.

It's all in the build of the Drill. *Climax San*

Save your Bills—
Climax Drills
British —— from
Handle to Steel Point

Joburg III is a Cradle Hammer Drill for wet or dry drilling, with automatic rotation and screw feed. Fitted with the famous little spool type valve.

THE CLIMAX ROCK DRILL & ENGINEERING WORKS LTD
4 Broad Street Place London E.C.2. Works · CarnBrea. Cornwall.

(INCORPORATED IN GREAT BRITAIN)

Local Address : **49, STELLA BUILDINGS,**
Corner Rissik and New Streets, —— JOHANNESBURG.
P.O. BOX 4256. —— Telegrams : "THUMBSCREW." —— Telephone 2794.

TRADE AND INDUSTRIES SECTION.

Week in the Mining Material and Engineering Trades.

BUSINESS DULL BUT HOPEFUL—IRON AND STEEL—TIMBER AND BUILDING MATERIALS—ELECTRICAL NEWS—BRITISH TRADE REVIVAL—OIL PROSPECTS — PROVINCIAL TAXES — DIAMOND TRADE REVIVAL—FINANCIAL—METAL MARKET.

The past week, as far as actual business transacted is concerned, has again been quiet and dull, although inquiries have been such as to cause the commercial community to hope for better and more active times in the near future. In the opinion of a very competent judge, who is in a position better than most to feel the pulse of commercial life, he saw unmistakable signs of betterment ahead of us at a period not so far distant as the present state of business would seem to imply. He was of the opinion that we should not go far into the second half of the year before meeting with a decided improvement in business generally. There was, he thought, quite a concerted move in all circles to try to improve the business conditions of the Union. The Government's new programme of railway extensions was undoubtedly causing a feeling of optimism in country districts, apart from the centres, where the spending power in wages, etc., in respect of such new works was a very big factor, which had unfortunately been lacking for a long time. The gold mining industry itself, he added, was doing remarkably well in regard to the important matter of working costs, which was of course the crux of the position, and should the results for June turn out as expected, then the improvement looked for generally in July and August may well eventuate. He emphasised the point—the significance of which cannot well be over-estimated—that our financial institutions are endeavouring to do all they can to assist their clients in a way which they have not found possible for some considerable time, which of course will tend to increase business considerably. For the moment, he said, things are not quite what we should call good, but then we have not been expecting any big results this month, which is too close to the final of the year's transactions with a good many concerns, with of course a natural reluctance on their part to increase in any way their commitments. In conclusion, he said that, taking a general view of things, the feeling in commercial circles was quite strong that what we had been striving for all along is going to be realised in the second half of this year. Prices, with the exceptions mentioned hereunder, remain much on the same level. The labour position on the mines can only be considered as extremely satisfactory and exceeding the hopes of most. A week ago 16,000 whites and 162,000 natives were working on the different mines, and should the present influx of natives continue—which there is no reason to doubt—the industry should be in a normal pre-strike condition in a very few months. The results of the conference of the Powers, adjourned from Genoa to the Hague are now being looked forward to in commercial circles with uncommon interest.

Iron and Steel.

Merchants report that the Commercial Exchange for this time of the month has been normal, not very bad, and finding a normal level. We could, said an influential importer, do very much more business at sacrificing prices, but we have realised the policy of profit-making business, and expect it will bear fruit very shortly. Stillson wrenches, which have been a free market for months past, are becoming scarce to-day, and merchants are now getting a reasonable profit thereon. Hammer handles are also not too plentiful to-day; indeed 36 inch are absolutely unprocurable. A month ago they were being sold at 21s. a dozen, but are now 30s. There is now, said this merchant, more consultation between big firms than hitherto; it is now not found so necessary to cut each other's throats in the way of competition, and in that way it is hoped soon to get back to normal levels. The low prices, he said, of the last six months have been quite artificial; it is a fact that to-day there are quite a number of lines which it pays the buyer to buy locally rather than to import; it clears the market, and merchants who have burnt their fingers in the past would be in no hurry to import again. This responsible merchant said he thought that in about two or three months' time business would be quite good. There was a scarcity in a number of lines here, which he thought would increase as time went on, and his opinion was that big merchants would eventually come into their own—no profiteering, of course, but they would at least be getting a reasonable profit on their outlay, which has not been the case, he was sorry to say, for some months past.

Latest quotations.—Dunswart iron, 18s. to 22s. per 100 lb. basis price: Union Steel Corporation, Ltd., 19s. to 22s. 6d.; imported iron and steel, flats, rounds and squares, from 25s. 6d. to 35s.: channels and joists, 25s. to 28s.; imported angles, 25s. to 28s.: smaller sizes, 2s. 6d. to 31s. 6d.; tee iron, 32s.; shafting, ¾ in. down to 3-16 in., 7½d. to 9d lb.; ⅝ to 1½ in., 6½d.; 1¾ in. to 6 in., 4¾d.; steel plates, 1-16, ⅛, 3-16, 23s. 6d.: 10 x 5 and larger, 25s.; ¼ to ¾, 21s.; spring steel, 7½d. to 8½d. lb.; bolts and nuts, hexagon, round, ⅜, 8½d. to 9¼d. lb.; ½ in., ⅝ and ¾, 40s. to 45s. per 100 lb.; hexagon nuts, ⅜, 8½d.; ½ in., ⅝ and ¾, 7½d.; fish plates, bolts and nuts, ⅜ in., 8d. lb.; ½ in., 6d.; ⅝ in., 5½d.; ¾ in., 5d.; dog spikes, 35s. per 100 lb.; rivets, ¼ in., 11d.; ⅜ in., 9d.; ½ in. and ⅝ in., 37s. 6d. to 40s. per 100 lb., ⅝ in. 50s.; brass rods, ¼ in. 1s. 5d.; ⅜ in. 1s. 3d.; ½ in. 1s. 2d.; ⅝ in. upwards, 1s. 1d. per lb.; hexagon brass rods, 1d. lb. extra; copper rods, ⅜ in., 2s.; ½ in., 1s. 11d.; ⅝ and upwards, 1s. 9d. lb.; tool steel, 2s. 11d. to 3s. 3d.; brass sheets, 1s. 10d. to 2s. lb.; copper sheets, ¼ in. to 18 gauge, 1s 10d. lb.; 20 gauge, 1s. 11d.; 22 gauge to 28 gauge, 2s. lb.; firebox copper, 2s. lb.; copper tubes, ¼ in., 3s. 3d.; ⅜ to ⅝ in., 2s. 6d.; ¾ to 4½ in., from 2s. to 2s. 4d. lb.; phosphor tin, 2s. 11d.; ingot tin (Lamb & Flag), 2s. lb.; ingot lead £28 per ton: drill steel, 5½d.; hollow, 7d. to 8d.; 1¼ in. 6½d. to 8d.; wire nails, 30s. to 35s.; shovels, 30s. to 40s. doz; wheelbarrows, 35s. to 45s.; picks, 37s. 6d. to 50s.; pick handles, 19s. 6d.: hammer handles, 14 in., 7s.; 18 in., 7s. 6d. to 8s.; 24 in.. 10s. to 11s.; 30 in., 17s. 6d.; 36 in., 30s.; piping, ¾ in., black, 4¾d.; 1 in., 5¾d.; 2 in., 1s. 1½d.; galvanised, in., 5¼d.; 1 in., 7¾d.; 2 in., 1s. 7d.; ¾ in. steam, 5¾d.: 1 in., 8d.; 2 in., 1s. 7d.: 1 C. steel coke tin plates, London, 1 C., 14 x 20. 180 lbs., coke quality, 19s. 6d., f.o.b. Swansea. 1 C., 28 x 20, 216 lbs., coke quality, £1 18s. 9d.; copper, £61 17s. 6d. cash, £62 three months, tin, £150 17s. 6d. cash, £151 17s. 6d. three months; linseed oil, £29 to £30 per ton, good demand; barbed wire, "Shorthorn," 69 lb., 13¾ gauge, 19s. 6d. to 21s. per coil; plain galvanised fencing wires, No. 8 gauge, 100 lb. coils, 21s. 6d. per coil; No. 10 gauge, 100 lb. coils, 24s. 6d. per coil; No. 12 gauge, 100 lb. coils, 26s. 6d. per coil; bulb tee fencing standards, 14 lb., 19s. 6d. per dozen;

12 lb., 25s. 6d. per dozen; barbed fencing wire, 14 gauge, 19s. per coil, 100 lb.; 12 gauge barbed wire, 22s. per coil, 96 lb.; plain wire, No. 8 galvanised, 21s. per coil, 100 lb.; fencing standards, 21s. for 12's and 24s. for 11's; droppers, 10s. per 100; screening, 5s. to 9s. 6d. per square yard; cyanide, 1s. 7½d.; zinc shavings, 1s. per lb.

Second-hand Machinery.

There is little to report in this section since our last. It is very satisfactory to see fresh syndicates being started daily, the latest being the old Buffelsdoorn, which has been taken over by a syndicate, which is now purchasing machinery, batteries and parts, boilers and engines, etc., in a thorough businesslike manner. A lot of machinery has recently come from the old Barrett-Berlyn proposition, which, after an existence of nearly 50 years, has just liquidated, and a well-known machinery dealer in town has purchased the whole of this company's plant, comprising batteries, trucks and rails, buildings and everything pertaining to a well-equipped gold mine. There have of late been a good many inquiries for batteries, and it is marvellous, said this dealer, how such wants can be supplied. Several batteries have been picked up from some of the obsolete syndicates round Moodies and Barberton way and some of the northern prospects, which mines have been lying idle for the past 20 years. There has been good inquiry for woodworking machinery and boilers and engines from Portuguese districts, Delagoa Bay, etc., and these orders are now being executed locally. There is a good deal of work being done at the old Spes Bona, whose prospects are so good that the syndicate has purchased a tube mill and has had a 10-stamp battery working there. There is, said a prominent dealer, no getting away from the fact that tube mills will replace batteries for sure, and there has been further inquiry for a tube mill plant to replace batteries; the good results shown by the Springs Mines confirm the advisability of introducing tube mills, as they show better results in recovery. Rhodesia has been buying pretty freely; in fact there appears to be a general spurt in all mining camps by syndicates which must have machinery, so that second-hand machinery dealers may well look forward to better times.

Engineering Shops.

Business is showing a slight improvement, said a prominent engineer this week, some of the larger establishments having increased their number of hands. He thought that the past depression had been a blessing in disguise because it had turned the attention of manufacturing engineers to the production of articles that they had not previously considered, and that, given the requisite attention to details, the locally made article would equal the imported both as regards price and quality.

Municipal Council Tenders.

At the ordinary meeting of the Town Council on the 15th inst. the Finance Committee reported on important matters and recommended the acceptance of several tenders, among which may be mentioned: Hume Pipe Company (S.A.), Ltd., for the supply of 1,250 yards 12 inch concrete pipes, 1,550 yards 15 inch concrete pipes, totalling £2,985; Middelburg Coal Agency, Albion Collieries, Ltd., for £480 and £2,325 respectively. The Council recommended that the revised amounts, as amended, amounting to £43,150 per annum, as provision for renewals, come into force from July 1, 1922, and that the estimate be amended to provide accordingly. That the tender of the Griffin Engineering Company for the supply of 500 tubes for Babcock & Wilsox marine type boilers at a total value of £519 15s. 10d. be accepted, as well as the Rhodesian Native Timber Concessions' tender for the supply of 1,000 Rhodesian teak sleepers at a total value of £825. The tender of the Transvaal Coal Owners' Association for six months' supply of coal for Dover Station (estimated at 7,500 tons per month), estimated value for 12 months £55,500, was recommended. Fencing of park adjoining Wemmer Pan: The tender of Mr. H. A. Philipson, amounting to £661 5s., was also passed, and the amount of £1,100 for the completion of the grand stand at the Wemmer Pan Swimming Bath was sanctioned, as well as the amount of £12,500 for the purchase of the Wemmer compound from the Village Main Reef G.M. Company, Ltd. (in liquidation). Supply and erection of fencing and gates, eastern portion of Ellis Park, the tender of Messrs. Wm. Bain & Co. (S.A.), Ltd., for £1,215 11s. 6d., including 5 per cent. for contingencies, was sanctioned.

Tenders are Invited.

By the Lindley Municiality for corrugated iron (24 gauge) and timber for power house, pump, well and filter house, per July 3; for water plant, one high lift centrifugal pump, 4,000 feet 6 inch piping, etc., fittings, machine filters; for electric plant, two suction gas engines, two suction gas producers and scrubbers, one switchboard complete, electric poles and copper wire, per July 15. By the Wepener Municipality, for fixing approximately 255 water meters (250 ½ inch and five 1 inch, per July 6. By the Middelburg (Cape) Municipality, for the erection of approximately 25 miles of bare copper wire, ranging from No. 4 to No. 12 S.W.G. on 180 poles, crossarms, etc., already erected, wire, etc., to be supplied by Municipality, per July 1. By the Corporation of the City of Grahamstown, electric lighting scheme, steel poles, overhead wiring and house connections, steel lamp posts and brackets, per October 1.

Timber and Building Materials.

Timber business is at the moment quite fair, some merchants being well occupied. Stocks here are getting rather low in Baltic deals, awaiting fresh shipments. In the building trade inquiries lately have been large, but things generally are not too good. Future prospects are, however, thought to be sound, as some very big contracts are on the tapis, such as, *inter alia*, the Benoni Town Hall, which will probably run into some £30,000, etc.

Timber prices.—3 x 9 deals, up to 18 teens 1s., over 18 teens, 1s. 1d.; scantlings, 10½d.; beaver boards, 4¼d. to 4½d.; floorings, 6d. to 6¼d.; ceilings, 4¼d. to 4½d.; Oregon, 5s. 6d. a cube; pitch pine, 7s. 6d. to 8s.; corrugated iron, 7⅞d. to 8⅞d. Furniture timber: Burmah teak, a cube; pitch pine, 7s. 6d. to 8s.; corrugated iron, 8d. to 10d. with a firm tendency. Furniture timber: Burmah teak, 17s. 6d. per cube here for first quality, 14s. 6d. for second at the coast; American oak, 1 in., 10½d.; 1½ in., 11d.; 2 in., 11½d. at coast; and Japanese oak, 1 in., 1s. 1d.; 1½ in., 2 in., 1s. 2d., at coast; West African mahogany, 1 in. to 4 in. thick, 26s. 9d. to 27s. 6d. per cube, at coast; Rhodesian mahogany, 9s. per cubic foot at mills; Honduras mahogany, 30s. per cubic foot; American yellow pine, 1s. 6d. per foot of 1 x 12 here; American pine shelving, 10d. per ft.; 3-ply wood, 3 m.m. up to 5 m.m., alder and birch, 4d. to 6¼d. per sq. ft.; oak and teak, 3-ply, 10d. per sq. ft. Prices for bricks remained about the same. Klompje bricks, 25s. per 100 at works; fire bricks, £10 per 1,000 at works; mixed, 70s.; wire-cuts, £4 10s. to £5; and £5 for pressed per 1,000, at kilns; columns from 20s. to 30s., according to size; roofing tiles, Marseilles, £25 per 1,000 at the works; chimney pots, 12 in., 7s. 6d.; 15 in., 9s.; 18 in., 10s. 6d.; dry red oxide, 16s. per 100 lbs.; white lime, 7s.; unslaked, 10s. 6d. per 180 lb. bag; 8 lb. bag, 1s.; blue lime, 4s. 3d.; blue plaster lime, 5s. 3d.; cement, 10s. 6d. a bag; damp course and roofing, 36s., 54s. to 55s. for 1 to 3-ply. Building operations remain very quiet and no great improvement blue plaster lime, 5s. 3d.; cement, 10s. a bag; damp course and roofing, 36s., 54s. to 55s. for 1 to 3-ply.

Second-hand Iron and Timber.

There is nothing new to report in regard to the second hand iron and timber yards. Business is slow, with few inquiries, but better things are expected shortly. Stocks are not too plentiful; prices remain at about 6d for iron and 8s for timber.

Electrical Goods.

Business, said a prominent dealer this week, remains much about the same as last reported; there is no increase in business to be recorded, nor any alterations in prices. Next month, he said, should see some improvement in trade. The Town Council announces its being in a position to grant a limited supply of electric power and lighting, where suitable mains exist, in the southern suburbs.

British Trade Revival.

The latest cable reports are to the effect that the revival predicted some time ago is eventuating, but rather slowly. Coal exports are being well maintained. In iron and steel a rather more cheerful feeling is noticeable, and the opinion is expressed that the termination of the protracted engineering trouble will be followed by the release of a large number of orders held in suspense, and that the turning point towards greater activity has been reached. Competition from Belgium is more active in some special lines, but not acute. Prices remain steady, and no lower level is looked for.

British Imports and Exports for May.

According to the *Board of Trade Journal*, the imports for May were valued at £88,000,000, the exports at £58,000,000, and the re-exports at nearly £9,000,000, compared with £80,000,000, £55,000,000, and £9,000,000 respectively in April

Welsh Coal to America.

After a period of 19 years a cargo of 4,000 tons of Welsh anthracite nuts and cobbles, together with 1,000 tons of bunker coal, has been shipped from Swansea to America as recently as 16 months ago.

Direct Shipments from Union to Hull.

The Hull Chamber of Commerce and Shipping has decided to make further representations to the South African Government with a view to establishing a direct steamship service between South African ports and Hull.

Direct Wireless Talking with England.

Colonel Childs, representing Marconi's Wireless Telegraph Co., Ltd., has arrived in Capetown in connection with a scheme for establishing a direct wireless service between South Africa and England. Colonel Childs stated in an interview that a direct service was absolutely practicable, which would have the effect of reducing the cost of the present cable service very materially. He is here to negotiate an arrangement with the Union Government.

Drop in British Food Prices.

According to a cablegram from the Ministry of Labour, the Department of Census gives the percentage increase in food prices in June, 1922, for the United Kingdom, over pre-War prices as 70. The corresponding figure for May was 72, and the highest point reached was in November, 1920, when it soared to 191 per cent.

Cost of Living Figures in Union in May.

This shows a tendency to fall in retail prices as against April.

British Telephones.

The House of Commons has voted £15,000,000 as part of a programme involving an expenditure of £35,000,000 for extending and reconstructing telephones, transferring underground lines, laying trunk cables, and erecting new exchanges.

Howick Falls Harnessed.

Howick has at last seen the installation of electric light. The power is being supplied through the medium of the local board by the rubber works, who have generated the power by harnessing the Howick Falls.

Provincial Taxes.

The Transvaal Committee of the Transvaal Manufacturers' Association, presided over by Mr. L. Serocold Skeels, has, in common with other associations and in keeping with general opinion in the Union, protested emphatically against the imposition of taxes scheduled and foreshadowed by the Provincial Councils of the Union. As a matter of fact, throughout the whole of South Africa there is a growing feeling of opposition to the Provincial Councils and the taxes imposed by them. It is satisfactory to note that the proposed tax on "ads." has been rejected by the Council, though it is to be reintroduced.

Financial.

New Indian Loan.—Arrangements are being made for underwriting a new Government of India Loan of £12,500,000 sterling, bearing 5½ per cent. interest; the issue price is 96, and the stock is repayable in 1932.

New French Loan.—From Paris it is announced that the Ministry of Finance promulgates the issue of a new loan of 3,200 million francs in 500-franc bonds by the Credit National on the 26th inst. The price will be 498½ francs, and the rate of interest 6 per cent. The issue is redeemable optionally between July, 1925, and July, 1940.

Reserve Bank.—The statement of the South African Reserve Bank for week ended June 17 shows ratio of cash reserved to liabilities to public at 76·4 per cent.

Metal Market.

London quotations, 19th inst.: Standard copper, £62 5s. cash, £62 10s. forward; electrolytic copper, £70 cash, £71 forward; standard tin, £152 12s. 6d. cash, £153 15s. forward; lead, £24 12s. 6d. cash, £23 12s. 6d. forward; quicksilver, £11 5s.; bar silver, 36⅛d.; bar gold, 93s. 6d. per ounce.

INVESTORS' DIARY.

Forthcoming Company Meetings.

(a) Annual general meeting; (s) special or extraordinary general meeting.

Meetings will be held in Johannesburg unless otherwise stated.

June 30.—Crown Diamonds (s), 12 noon.

Sept. 21. Transvaal Gold Mining Estates

MAGNOLIA
ANTIFRICTION METAL
"FLOWER" BRAND.

FLOWER BRAND MAGNOLIA ANTI-FRICTION METAL

HAS THE LOWEST CO-EFFICIENT OF FRICTION.

KEEPS down the bill for lubricants, making **BEARINGS** smooth as glass and keeping them **COOL** under heaviest pressures and highest speeds.

Manufactured and Sold By—
THE MAGNOLIA ANTI-FRICTION METAL CO. OF GREAT BRITAIN, LIMITED,
49, QUEEN VICTORIA STREET, LONDON, E.C.
Agents for South Africa: FRASER & CHALMERS, Ltd., Johannesburg, Bulawayo and Salisbury

BE ON THE SAFE SIDE
— SPECIFY "SaBeN" —
SHEFFIELD STEELS FOR
ALL MINING AND GENERAL
ENGINEERING PURPOSES.

"SaBeN"

DRILL STEEL. HOLLOW DRILL
—STEEL. AUGER STEEL.—
"PITHO" OIL - HARDENING
— STEEL. —
"SaBeN" AIR - HARDENING
— STEEL. Etc., Etc. —

ALSO :—SHOES AND DIES. CAM
SHAFT STEMS. SHOES AND
— TAPPETS. TWIST DRILLS.—
REAMERS. GEAR CUTTERS. Etc

MANUFACTURED BY
SANDERSON BROS. & NEWBOULD,
LTD.,
SHEFFIELD

STEELS

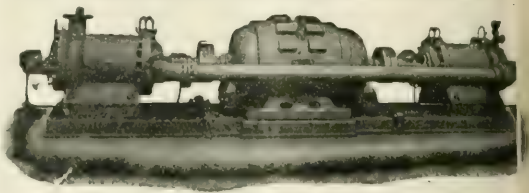
SOLE AGENTS :—
BARTLE & CO., LTD.,
- LOVEDAY HOUSE. -
Box [illegible] 'Phone [illegible]
JOHANNESBURG.
AND AT KIMBERLEY & DURBAN

CARBIDE

—ALL SIZES—
IN 1, 5, 10, 50 lb. TINS
and 100 lb. DRUMS

Apply: MANAGER,
RAND CARBIDE, LTD.,
SOUTH GERMISTON
'Phone 252 Germiston.

SULZER
HIGH-LIFT CENTRIFUGAL
PUMPS.
For Mine Drainage, Waterworks, Etc.



Pumping Set suitable for lift of 2,500 ft.

LARGE LOCAL STOCKS IN
MEDIUM AND LOW-LIFT PUMPS.

For particulars apply to:
RICE, WILSON & HERD,
86, 87, 88, 96, Standard Bank Chambers, Commissioner St.
P.O. Box 930 Telephones 2299 & 2300. JOHANNESBURG.
Also South African Agents for
CALLENDER'S CABLE & CONSTRUCTION CO., LTD.
BRITISH THOMSON-HOUSTON CO., LTD., etc., etc.

Telegrams :
"NIVONIA," Johannesburg.
'Phones :
2196,—2197,—2198

J. & R. NIVEN, Ltd.,
ENGINEERS,
CONTRACTORS,
MERCHANTS.

BALATA BELTING
JAMES DAWSON & SON, Ltd.
BITUMEN SHEETING
GEO. M. CALLENDER & CO., Ltd.
BOILERS
PENMAN & CO., Ltd.
COAL CUTTERS AND CONVEYORS
JEFFREY MANUFACTURING CO.
COLLIERY PLANT
CAMPBELL, BINNIE, REID & CO.
DRILL STEEL
JOHN NICHOLSON & SONS, Ltd.
ENGINES, LOCOMOTIVES
ANDREW BARCLAY, SONS & CO., Ltd.
ELECTRIC LIFTS
A. & P. STEVEN, GLASGOW.
CRANES
BUTTERS BROS., GLASGOW.
HOSE, VALVES, SHEET RUBBER
THE LEYLAND & BIRMINGHAM RUBBER CO., Ltd.
LUBRICANTS
THOS. HINSHELWOOD & CO., Ltd
STEEL SCREENING
THOS. LOCKER & CO., Ltd.

Barsdorf's Buildings, Marshall Street,
JOHANNESBURG.

The Week's Meetings.

RANDFONTEIN CENTRAL.

The New Plant.

Development Progress.

Mr. J. Munro was in the chair at the annual general meeting of the Randfontein Central Gold Mining Company on the 8th instant. Others that attended were Messrs. G. J. Joel, F. L. Marx, R. L. Innes, W. M. Munro and J. H. Crosby, with F. Hall (secretary) and H. Francis (transfer secretary).

The Chairman made the following address :—

"I beg to submit the directors' report and audited accounts for the year ended December 31, 1921, for your consideration and adoption.

During the year the quantity of ore crushed amounted to 1,461.000 tons, which was 99.000 tons less than the tonnage milled in 1920. This decrease in tonnage milled was due to two adverse factor, viz., delay in the installation of the electric hoist at the south vertical shaft, which was originally intended to be in commission in February, but which, owing to late delivery, was not ready until the end of the year, and secondly to shortage of native labour. Working costs per ton were slightly higher than for the previous year, but the closing down of Nos. 8 and 9 sections, where the grade was low, resulted in an improvement in value per ton milled, and an increase of £87,219 in the working profit for the year, notwithstanding the lower price obtained for our gold. During the year 427,893 fine ounces were produced at a cost of 94s. 8d. per fine ounce, and sold at the average price of 106s. 2d. per ounce, as compared with 410,814 ounces produced in 1920 at a cost of 104s. 4d. and sold at an average price of 112s. per ounce. It will be seen, therefore, that the whole of the working profit was due to the premium on gold.

Reduction in Working Costs.

With gold at its present figure, last year's operations would have resulted in a substantial loss, and, if we are to carry on mining successfully when gold falls to the standard price, considerable reductions will have to be made in working costs.

The mine is laid out to cope with a large tonnage of ore, and in order to keep the mill fully supplied a plentiful supply of native labour is essential. Randfontein in the past has not been a popular place with the natives, owing chiefly to the steepness of the reefs and the large amount of climbing which had to be done in the southern section. This latter disability has been removed by bringing into commission the two new vertical shafts. During the year the native labour strength never reached more than 59 per cent. of the underground complement allotted to the mine, and, although generally speaking native labour was plentiful on the Rand during the latter half of 1921, yet Randfontein suffered severely from a shortage throughout the year. Conditions have improved and everything possible has been done to attract the natives, but the natural handicap of steep reefs will always remain.

During the year £170.248 was spent on machinery and plant, £84,095 on shaft sinking, and £10.516 on buildings, making a total of £264,859, against which there were recoupments from sales of machinery and buildings no longer required amounting to £17.523.

Increased Loans.

The loan from the Randfontein Estates Gold Mining Company (Witwatersrand), Ltd., which stood at £868,000 at the end of 1920, was increased to £1,120,000 at the end of the year under review. The debenture issue has been reduced by the sum of £122,000, and the liability under this heading now stands at £2,193.000, and further debentures to the value of £130,000 were purchased towards the close of the year, to meet the ninth annual instalment due for redemption on March 1 this year.

Development was pushed vigorously during the year. The total linear footage accomplished amounted to 47,978 feet, an increase of 8,041 feet over the previous year. The results obtained were satisfactory and the ore reserves, which were re-calculated at the end of the year, showed a marked increase, being estimated at 4,142,100 tons of an average value of 6.2 dwts. over a stoping width of 49 inches.

A considerable amount of work has been accomplished on the battery series during the year. Two incline shafts, known as the north and south battery shafts, were sunk 355 feet and 463 feet respectively, and a good deal of development carried out from the surface and on the horizon of the 1st level. At present development is being pushed on the 1st level from both shafts, and the south shaft is now well below the horizon of the 2nd level, which is being opened out for development at this point. Two reefs, known in this district as the Horsham and Lindum Reefs, are being developed with most encouraging results, showing so far a payability of about 60 per cent.

In 1921, 33,400 tons of reef were milled from this section, taken from surface dumps, preliminary development, and outcrop stopes. Permanent headgears and equipment are being installed, fresh stope faces are coming into commission and in a few months the tonnage, which is now about 5,000 per month, should show a substantial increase. The values are quite up to expectations.

General Smuts's Appeal.

When the strike was declared on January 10 last, all the employees ceased work with the exception of those required for essential services. On January 14 the men engaged on these services were withdrawn by their unions, and the work was carried on by the officials, to whom on behalf of shareholders the board of directors conveyed their appreciation and thanks for the excellent services rendered by them. Several employees answered General Smuts's appeal to the men to return to work in February, and together with the staff carried on mining operations on a limited scale from that date until the termination of the strike. During the first quarter of the present year, 76,100 tons of ore were crushed, the loss for the period amounting to £165,548. During the month of April 88,700 tons were crushed, resulting in a profit of £11,160, but owing to the very heavy depletion in the native labour force, practically no development or shaft-sinking was accomplished during the month.

During May 103,500 tons were crushed at a profit of £21,516, and development was re-started on a limited scale.

The mine is still very short of natives, but it is hoped that an improvement will soon take place in this respect, and that with the resulting increase in tonnage milled we shall show increased monthly profits.

Since the close of the financial year the death occurred of Mr. Charles Marx, who had been a director for many years and rendered valuable services to your company. Mr. Fritz Marx was elected by the Board to fill the vacancy caused by Mr. Marx's death.

The directors' report and accounts were passed unanimously.

The appointment by the Board of Mr. F. L. Marx as a director was confirmed, and Messrs. S. B. Joel and J. H. Crosby were re-elected directors.

The auditors, Messrs. C. L. Andersson and Co. and H. J. Lamb, were reappointed.

RANDFONTEIN ESTATES.

"Central" Interests.

Company's Financial Position.

The Randfontein Estates Gold Mining Co. held its annual meeting in Consolidated Buildings, Johannesburg, on the 8th instant. Mr. J. Munro was in the chair. Others present were Messrs. G. J. Joel, R. L. Innes, W. M. Munro, J. H. Crosby, F. Mann, A. C. Silver, and F. Hall (secretary).

The Chairman addressed the meeting as follows :—

The directors' report and audited accounts for the year ended December 31, 1921, are submitted for your approval and adoption.

Randfontein Estates v. Sir Joseph Robinson, Bart.—Before reviewing the company's financial position, I wish again to refer to the action initiated by your directors against Sir Joseph Robinson for the recovery of certain money alleged to have been received by him as profits on certain transactions whilst acting a fiduciary capacity as chairman of your company. As you will see from the directors' report and accounts, a net sum of £353,907 5s. 1d. has already been received from Sir Joseph Robinson in respect of the litigation with which shareholders are now fully conversant. In this connection Sir Joseph applied for permission to appeal to the Privy Council against the judgment of the Appellate Division, but this permission was refused him in November last, so that in so far as this amount is concerned it can now be regarded as finally settled.

There remains still to be settled that portion of the case dealing with the Home Syndicate claims transaction. Judgment in this portion of the case was also given in favour of the company with the proviso that should the parties fail to come to an agreement on the amount of the profit alleged to have been made by Sir Joseph Robinson, the matter should be referred to the decision of the Supreme Court of the Union of South Africa, Transvaal Provincial Division. As the parties to this action failed to come to an agreement, the matter was argued in this Division, when the company's contention was upheld, and costs given against Sir Joseph Robinson. An appeal against this decision has been noted by Sir Joseph Robinson, and as the matter is still sub judice, I shall refrain from saying anything further in connection therewith at the present juncture.

In so far as the action threatened by Sir Joseph Robinson against the company is concerned, orders have been granted by the Court to take evidence on commission, and as this case is also sub judice, I am not in a position to give shareholders any information in regard thereto.

Redemption of Debentures.

Turning now to the accounts, you will see that the capital of your company remains unchanged at £3,[illegible]. The eighth redemption instalment of the first mortgage debentures amounting to £87,400, purchased during the previous year, has been written off and a further amount of £4,300 debentures purchased by the trustees for the debenture holders out of moneys of the company held by them has also been written off, thereby reducing the liability under this head to £1,344,200.

During the year £86,700 debentures to meet the redemption instalments due on March 1, 1922 were purchased at a discount of £11,881 11s. 11d., and £6,200 debentures at a discount of £914 7s. 1d. were also purchased on account of the 1923 redemption. The first mentioned debentures to the value of £86,700 have since been cancelled, and the transaction will be reflected in the current year's accounts.

Depreciation Account.

During the year the reserve for depreciation account has been reduced by a sum of £11,750 13s. 5d., and now stands at £1,582,887 13s. 7d. Of the amount so reduced, stocks and shares were written down by the sum of £10,353 13s., stores by £1,355 0s. 5d., and live stock and vehicles by £12.

The revenue as compared with the previous year shows an increase of £6,192 9s., and taking into consideration the additional discount on debentures purchased, shows a total increase of £11,108 5s. 5d. The surplus carried over to the next account is £897,267 16s., as against an amount of £[illegible] 17s. 9d. last year.

It will be noticed that the loan from the Johannesburg Consolidated Investment Company, Limited, which stood at £336,000 at December 31, 1920, has been reduced to £35,000 as at December 31, 1921. Your directors were able to effect this substantial reduction as a consequence of the amount received from the litigation in the case against Sir Joseph Robinson, Bt.

The other items on the debit side of the balance sheet are such as call for no special comment.

On the credit side of the balance sheet, two items call for special mention, namely, Randfontein Central debentures and loan to Randfontein Central Company.

Randfontein Central Debentures.

The instalments taken up at the end of the year was £130,000, as against £122,000 taken up at the end of the previous year. I may here once again state that according to the debenture mortgage bond, the annual drawings are increased every year as the interest payable becomes less. The whole of this debenture issue is held by your company, and the procedure adopted in order to avoid the formality and expense of drawing, is for the Estate Company to sell to the Central Company the stipulated number of debentures before the drawing should take place, and they are then cancelled by the Central Company as the date for payment arrives.

The loan to the Randfontein Central Company has been increased during the year from £868,000 to £1,120,000. As you are aware your holding in the Central Company is so extensive, both in debentures and shares, and the interests of the two companies are so interwoven, that it is incumbent on your company to finance the Central Company in order to enable it to complete its scheme of reorganisation. This work is now nearing completion, and it is hoped that the benefit of the large expenditure incurred will now begin to be felt by increased profits, in which your company will so largely participate. A copy of the directors' report, balance sheet, and the proceedings at the general meeting of the Central Company will be furnished to our shareholders with the proceedings at this meeting.

The property account has been reduced during the year by the amount of £353,907 5s. 1d., being the amount received in respect of the litigation already referred to, and £4,794 5s. 7d., representing the amount received from the sale of land and township plots.

I am pleased to be able to inform you that the sale of plots in the Randfontein Township is proceeding as satisfactorily as can be expected. Out of a total of 767 plots, 261 had been disposed of up to December 31 last.

The directors' report and accounts were passed.

The appointment by the Board of Mr. Geoffrey Joel as a director was confirmed, and the retiring director, Mr. J. G. Lawn, C.B.E., was re-elected.

The auditors, Messrs. C. L. Andersson and Co. and H. J. Lamb, were reappointed.

The Colour Question.

More interesting evidence by the coloured workers and the natives was given before the Mining Industry Board this week. The members of the Coloured Labourers' Union, Messrs. R. A. Goodman (Secretary), G. W. Crowe and J. W. Onting, submitted a statement containing a list of occupations connected with the industry which are closed to the class of people they represent (mainly Cape coloured). This barrier is a statutory one under the Mining Regulations. The scope and operation of the Regulations in excluding their class, on the ground of colour, from occupations to which on merit members of that class might otherwise have access, made it very difficult to supply an exhaustive list of such occupations. It would, however, clearly appear that such exclusion was the result of a calculated policy to shut out people on the score of colour and irrespective of any claims they may have on the score of ability and competency. This barrier has existed only since and in consequence of the establishment of these same regulations. The so-called status quo agreement has reinforced the regulations, shutting out the coloured man. It was keenly felt by the people for whom they spoke that the position created by the erection of this barrier referred to was, especially in this country, utterly indefensible. It most unjustly affected a large class of intelligent, civilised and capable men, born in this country and could only be regarded as a regrettable expression of class and race selfishness. It could have no moral justification. It was the more remarkable by reason of it being largely due to the pressure of the Labour-cum-trade union movement in this Province. The right to live and to progress according to an individual's ability and capability was thus denied to the coloured man, and this fundamental right was denied on the wholly illogical ground that he was a coloured man. Their Association claimed equality of opportunity irrespective of colour, and the right to an outlet for such skill and ability as they had acquired, and that all avenues for their exercise should be equally open to them without let or hindrance. They did not urge the introduction of any but healthy competition. They were prepared to stand or fall by competition on merit. Such competition could only advance and not impair the efficiency of both the white worker and ourselves. The statement concluded: " Our submission to the Commission is to recommend the removal of the artificial barrier that shuts us out from the skilled occupations presently closed to us on the wholly irrational ground of colour, and to make the test this: Is the candidate for the job a qualified and competent person to fill it? The witnesses said their Society had a membership of between 2,000 and 3,000, and at the time of the strike some 760 worked on the mines on semi-skilled work, as they were not allowed to do skilled work. The witnesses, in reply to questions, contended that if the colour bar was removed there would be better feeling between whites and " coloured," and they were confident they could qualify for all positions if there were no artificial barriers. They maintained a white standard of living—some of them higher than many whites—and they were by no means desirous of working at a lower wage than a white man. The asked for equal pay for equal work. Mr. Crowe mentioned that whereas coloured men could be members of Trades Unions in the Cape and Natal they could not become members in the Transvaal, therefore no trade unionist was allowed to work alongside them on skilled work, not on account of colour but because the coloured men were not trade unionists, although they might be in the Cape or Natal. Similarly a coloured man could be a member of the Dutch Reformed Church in the Cape, but when he came to the Transvaal he could not become a member of the church here. They could not claim the same rights and privileges.

Box 3807. **Tel. 5892.**

WRIGHT'S ROPES

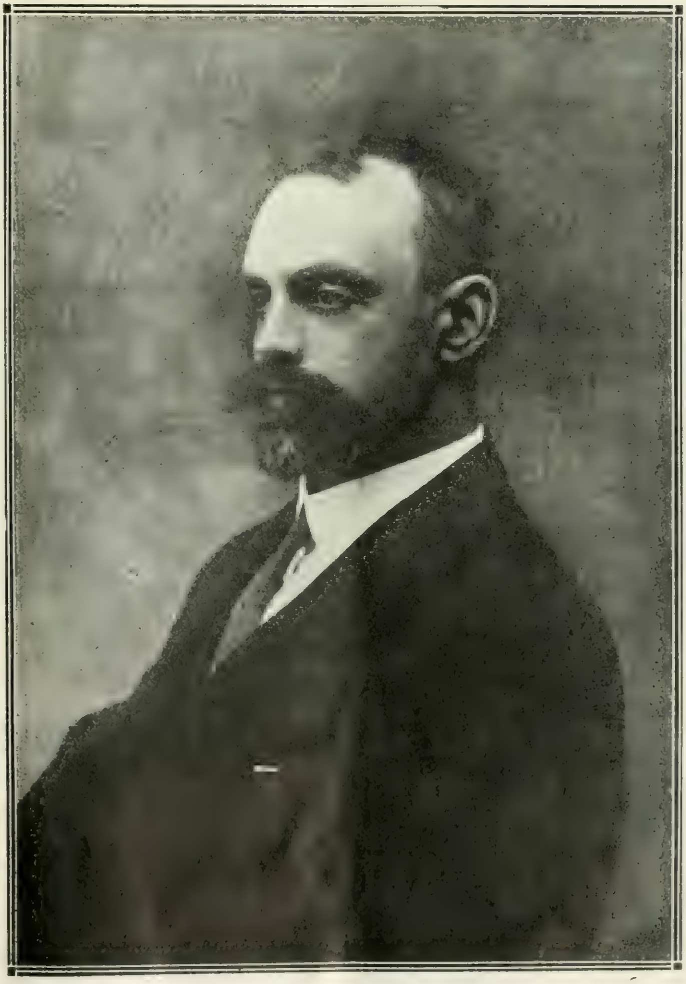
H. ALERS HANKEY - - - Sole Agent.

Robinson Deep—Murchison Range—Oil Shale.

The South African
Mining & Engineering Journal
THE ONLY MINING AND ENGINEERING WEEKLY PUBLISHED IN AFRICA.
Established 1891.

Vol. XXXIII., Part I. JOHANNESBURG, TRANSVAAL, SATURDAY, JULY 1, 1922. No. 1605.

The New President of the Chemical, Metallurgical and Mining Society of South Africa.



Professor G. A. Watermeyer, who has been unanimously elected President of the C.M. and Mining Society of South Africa for this year, is Professor of Mining at the University of the Witwatersrand.

SIEMENS BROTHERS

& CO., LIMITED

RUBBER AND PAPER CABLES.
TELEGRAPH AND TELEPHONE CABLES.
FLEXIBLES.
"STANNOS" WIRES.
ENAMELLED WIRES.
JOINT BOXES.
COMPOUNDS.
TAPES.
CABLE APPLIANCES.
ACCESSORIES.
EBONITE.
TELEGRAPHS.
MANUAL TELEPHONES.
AUTOMATIC TELEPHONES.
RAILWAY SIGNALLING.
SHIP SIGNALLING.
MINE AND POWER STATION SIGNALLING.
FIRE ALARMS.
LINE MATERIAL.
TUBULAR POLES.
LATTICE POLES.
INSULATORS.
LINE TOOLS.
FLUID CELLS.
DRY CELLS.
BATTERY CARBONS.

Representatives in South Africa:

A. J. G. SIMPSON, A.M.I.E.E.
African Life Buildings, 85, St. George's St.,
CAPE TOWN.
P.O. Box 239, Cape Town. Telephone 1202 Central.

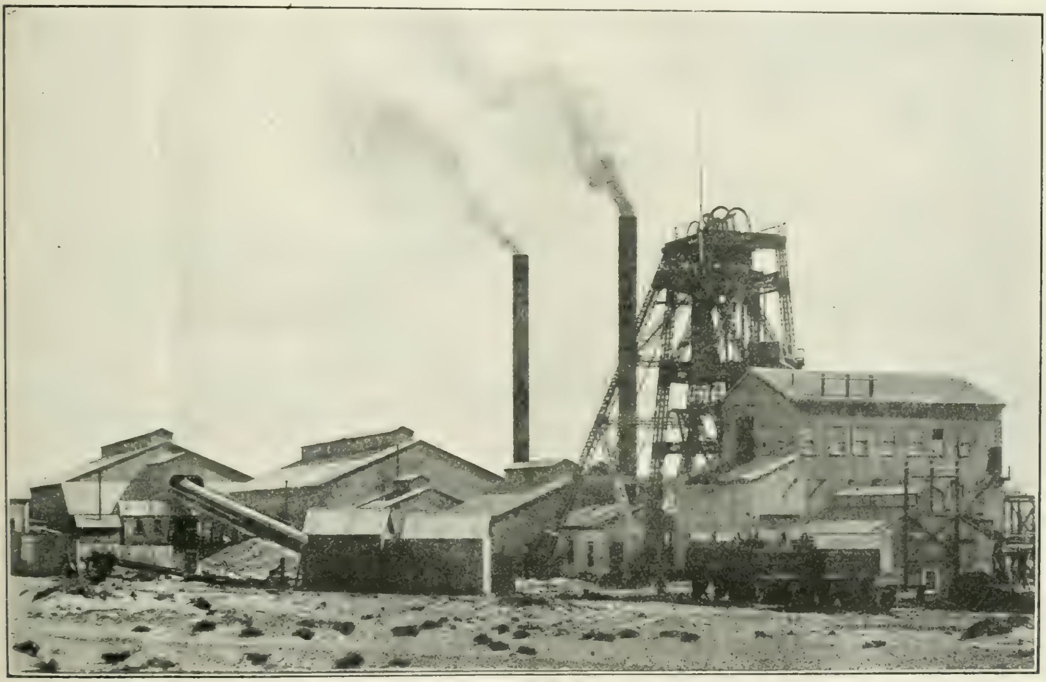
G. H. B. BERNARD, A.M.I.E.E.
9-10, Cotts Buildings, Rissik and Fox Sts.,
JOHANNESBURG.
P. O. Box 7404, Johannesburg. Telephone 408 Central.

Telegrams: "SIEMENS."

The Steady Progress at the Robinson Deep.

GOOD DEVELOPMENT VALUES IN LOWEST LEVELS BEING MAINTAINED—COSTS COMING DOWN—SATISFACTORY JUNE RETURNS.

Few mines on the Rand have more to gain by a reduction in costs than the Robinson Deep, and it is not too much to say that the continuance of costs at the pre-strike level of 26s. 6d. threatened the very existence of the mine. Since the resumption of work after the strike costs have displayed a satisfactory downward tendency, and it is understood that the good tonnage crushed in June will help to produce a progressive decrease in the average cost. The profits may not, of course, be proportionately increased owing to the usual absorption of gold in the reduction plant. No quarterly report was issued for the first three months of the year, in which a loss of £47,000 was incurred, but it is understood that the good developments in the lower levels are being maintained. Working conditions are gradually returning to normal and the mine, with adequate native labour, is getting into its stride.

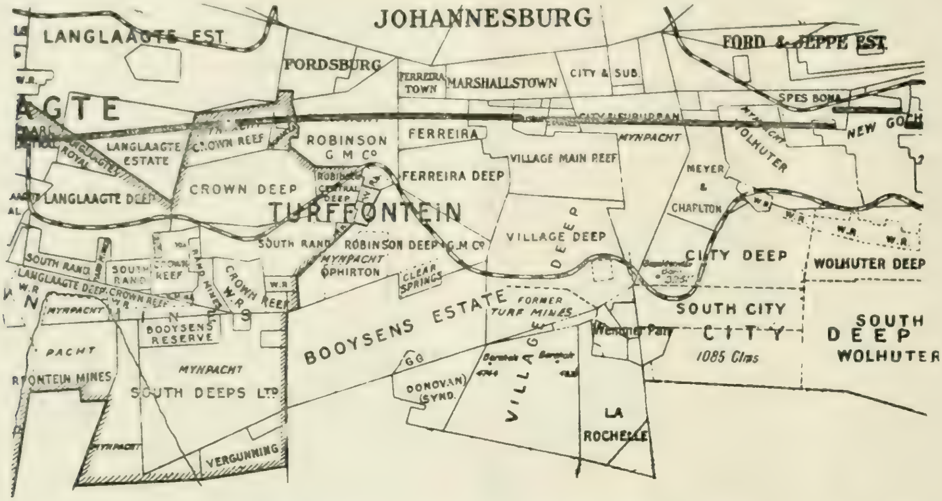


Robinson Deep: Mill and Boiler House and Shaft Head.

Position of the Mine.

The position of the mine before the strike was an interesting one. During 1921 the tonnage milled was 70,000 in excess of 1920, due to a larger native labour supply and to improved machine stoping efficiency. This larger tonnage, whilst being a factor in the reduction of working costs from 29s. 2d. to 26s. 6d., or 2s. 8d. per ton, was not the only factor—improved efficiency in mining and development work largely contributed to this decrease. In dealing with costs it is of interest to note that the costs per ton for 1921, namely, 26s. 6d., compared with 19s. 7d. for 18 months ended December, 1916, that being the first financial period of the company. At the end of last year the ore reserves stood at 1,936,000 tons of an average value of 6·7 dwts. over a stoping width of 66 inches, equal to 442 inch dwts. At the annual meeting the other day, the chairman, Mr. D. Christopherson, said: "Recent developments in the lower levels in the Booysens ground are very encouraging, most of the development being now confined to those areas." Mr. Christopherson added: "It is somewhat pleasing to note that of the development footage of 18,000 feet accomplished last year, 10,000 odd feet were sampled, of which 78·6 per cent. was in payable reef indicating an average value of 18·3 dwts. over an average reef width of 30·5 inches, equal to 560 inch dwts. We hope, when the labour force becomes normal, to crush at the rate of 700,000 tons per annum, with a recovery of 26s. (taking gold at par). The profit therefrom depends entirely on working costs, but it must be the endeavour under normal conditions to work the mine eventually at certainly not more than 20s. This would give 6s. a ton profit. Whatever gold may realise over and above par value will be to the good. On 700,000 tons per annum, at 5s. per ton, a working profit of £210,000 would be made; but against that there is £20,000 for interest on loan until it is repaid, and also an allowance must be made for profits tax and expenditure on renewals, say another £35,000; which would leave a net profit of £155,000—that is when the mine is in a position to work at full—out of which all capital expenditure and loan repayments will have to be provided." As regards the loan of £300,000 which is due to be repaid at the end of this year, Mr. Christopherson said: "At the moment it is not possible to forecast what the financial position of the company will be at the end of the year, as it is impossible to say how quickly normal working conditions will be attained, but I certainly hence the present position will be maintained, if not improved. It entirely depends on how soon the native labour force is replenished and on the restoration of good feeling amongst all concerned in the working of this property. For the same reason it is not possible to say when "A" shareholders may expect dividends to be paid out to them again, with the additional reason that this must also depend on what arrangement we can make for an extension of time [illegible] the loan may be repaid."

per annum (8s. per share) from date of incorporation to the end of the year 1919; £75,000 per annum (3s. per share) from January 1, 1920, to the end of the year 1936; £62,500 (2s. 6d. per share) for the year 1937; £37,500 (1s. 6d. per share) for the years 1938 and 1939, and £12,500 (6d. per share) for the year 1940; and thereafter until the capital on the "A" shares has been paid off a sum equivalent to interest at the rate of 5 per cent. per annum on such capital. The company shall set aside £1,000 per annum as a sinking fund to pay off the "A" shares on January 1, 1941. There is a debt of £300,000 falling due next December, and after settlement of that debt and the payment of the accumulated interest on the "A" shares—which interest now amounts to 22s. per share—the B shares will be entitled to the balance of the profits, if any. Plainly, the whole future of the company is bound up with the reduction of working costs to the 1916 level.



The Mines of the Central Rand, showing Booysens Estate Area belonging to the Robinson Deep, from which good development values are being obtained.

The "A" and "B" Shares.

A word of explanation of the difference between the "A" and "B" shares may be of interest. The capital of the company amounts to £806,807, consisting of £25,000 in 500,000 "A" fully-paid shares of 1s., and 781,807 "B" shares of £1 each. The "A" shares are entitled to fixed cumulative preferentive dividends at the rate of £200,000

Mining Men and Matters.

Mr. G. Douglas, the geologist of the "Quest" expedition, accompanied by Captain Wilkins, the naturalist, visited the Rand this week and was shown over the Crown Mines and the Premier Diamond Mine.

* * *

The certificates issued by the Mines Department for the period ended 24th June, 1922, were as follows:—Mine Managers (Metalliferous Mines): T. L. P. Farthing, W. W. Hammond, R. M. Phillips. Collieries: S. H. Cashmore, C. O. Deacon, J. C. Hislop, H. V. Orwin, E. Sharp, A. Shearer. "Non-fiery" Collieries. Y. H. M. Crosby, C. W. B. Jeppe, M. J. Turner. Mine Overseers (Metalliferous Mines): H. Mills, G. Palmer, A. Pienaar, W. E. Rink.

* * *

We learn that Mr. A. E. Newson has recently returned from England and has opened an office in Cullinan Building, Johannesburg, for the purpose of looking after the South African interests of several important British firms who are exporters of iron and steel commodities. Mr. Newson is widely known throughout this country, where he has specialised in these lines particularly during the last 14 years. We understand he is confining his efforts to indent business only.

At the annual meeting of the South African Chemical Institute, at which Professor G. H. Stanley presided, the following were elected members of the Council for the ensuing year: James Gray, F.I.C.; J. McCrae, Ph.D., F.I.C.; G. H. Stanley, A.R.S.M., F.I.C.; R. B. Denison, D.Sc., Ph.D.; J. A. Campbell, A.R.T.C., F.I.C.; J. S. Jamieson, F.I.C.; C. F Juritz, M.A., D.Sc., F.I.C.; J. A. Wilkinson, M.A.; J. Lewis, M.A., D.Sc.; H. H. Green, D.Sc.; H. R. Adam, B.Sc.; and L. Colquhoun. Members representing Associates: J. B. Robertson, M.A., B.Sc., A.I.C.; and J. G. Blackmore.

* * *

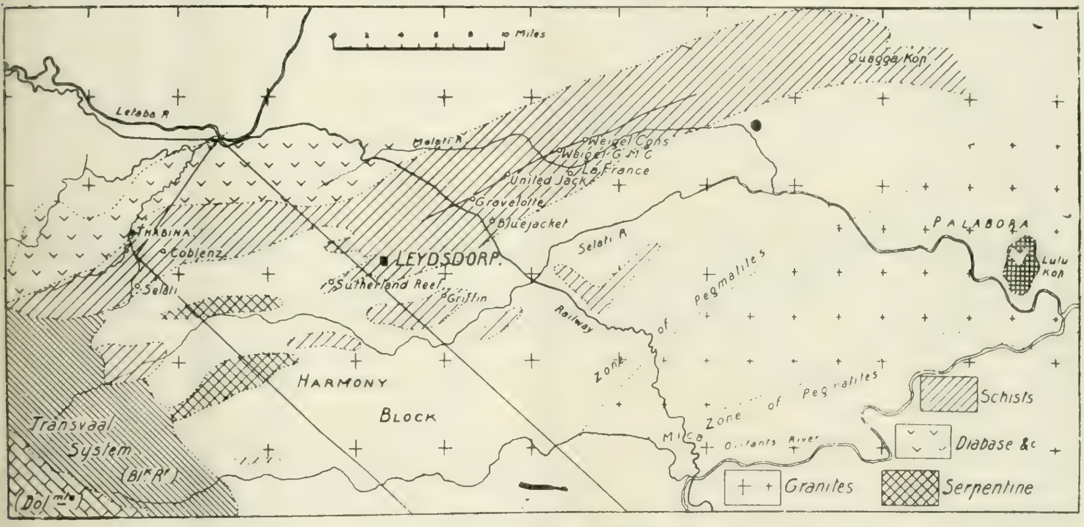
At the annual general meeting of the Chemical, Metallurgical and Mining Society of South Africa the following gentlemen were declared to have been elected as office-bearers and members of council for the year ending June, 1923:—President: Professor G. A. Watermeyer (unopposed). Vice-Presidents: Messrs. F. W. Watson, C. J. Gray and H. R. Adam. Hon. Treasurer: Mr. J. R. Thurlow (unopposed). Members of Council: Mr. J. Chilton, Mr. R. A. Cooper, Mr. J. H. Johnson, Mr. A. King, Mr. H. S. Meyer, Dr. A. J. Orenstein, Mr. J. E. Thomas, Mr. John Watson, Mr. A. Whitby, Mr. H. A. White, Mr. J. L. Willey, Mr. J. A. Woodburn, with the retiring President, Mr. F. Wartenweiler.

The Murchison Range Goldfield.

A FIELD FOR THE SMALL MAN—CAUSE FOR NEGLECT—NEW REFRACTORY ORE PROCESS.

Mr. F. Humphrys writes: "It has occurred to me that it might be et interest to you to know that the hitherto totally refractory auriferous antimonial ores of the Murchison Range can now be successfully treated to the extent of an extraction of nearly 90 per cent. gold contents by a simple process recently invented by me. As you are probably aware, the Murchison Range antimonial reef deposit, is, after the Rand, the next most consistent and extensive in the Union." We have requested our correspondent to furnish further particulars of his process, and in the meanwhile it may be of interest to examine his statement regarding the Murchison Range goldfield. It would seem that our correspondent's claims are not substantiated by the history of the Antimony Range. Years ago the Murchison Range and the other auriferous areas of the low country, east and north-east of Pietersburg, were the centres of a good deal of mining activity, and seemed to have in them the beginnings of a busy and prosperous future. Gradually, however, in spite of some sporadic successes in the Birthday district, and various encouraging and even glowing reports from the Leydsdorp neighbourhood, public interest in the field diminished to almost vanishing point, large blocks of claims were abandoned, the enthusiasm of the "fossicker" was quenched, and the gentle flow of financial aid from outside sources became reduced to the merest trickle. Amid the general desolation a few resolute men, refusing to become disheartened, spent a considerable amount of time and money in the effort to overcome the difficulties of the country and to prove its value as a mining area under improved conditions of transport and living. Among these, Mr. John Jack, of Pretoria, and his associates in the United Jack venture on the Murchison Range, were deserving of special mention. Having developed their mine in the face of many obstacles, and spent large sums in the endeavour to solve the auriferous antimony problem which had been the bugbear of the Range ever since its discovery, they erected a metallurgical plant with a capacity of 50 tons per diem, in accordance with the advice and designs of Messrs. McArthur, Forrest & Co., of Glasgow, and had hopes of drawing an excellent revenue from both the antimony and gold contents of their ore. The process, however, was a failure.

In the concluding part of his report upon "The Geology of the Murchison Range and District," Mr. A. L. Hall, of the Mines Department, makes the following remarks with reference to the economic prospects of the neighbourhood: "As regards the economic position of the district, it is specially suited for small enterprises, either for companies with a modest capital or for energetic individuals. Owing to the very uncertain nature of several of the lenticular and other reefs, the patchy and erratic distribution of pay values, and the inherent geological difficulties of prospecting, there is not much room along the Murchison Range for larger enterprises, planned on a more ambitious scale. . . . The fundamental drawback of no efficient transport, which during so many years has dragged back the wheel of industrial progress, is now permanently and effectively disposed of, and there is little doubt that several previously dormant propositions—probably both the promising as well as the doubtful ones—will share in the industrial revival which may reasonably be expected to follow on the completion of the Selati Railway. Incidentally, this opening up of the country will have the highly beneficial effect of keeping the local population no longer in comparative isolation under sometimes distinctly unhealthy conditions. It may not be out of place here once more to emphasise the urgent necessity of a comprehensive and permanent water supply for the general purpose of mining development." Mr. Hall draws attention to the surprisingly little systematic prospecting that has been done, and comments upon the fact that this work has been generally confined to certain lines of country. The defective methods of prospecting may be ascribed to the fact that the geology of the low country, in these parts at least where ore deposits appear to prevail, is of a somewhat complicated and difficult kind. The habit and behaviour of the auriferous quartz reefs of what may be called the Murchison Range district, for example, except in so far as they follow the custom of quartz reefs generally, seem to be little understood. Their relationship to the various schists with which they are associated and above all the influence of these schists upon the character and value of the ore-bodies contained within them, have apparently not been investigated at all. The great advances that



Map of Murchison Range District.

have been made in the sites of [illegible] in various parts of the district, have served to establish the importance of scientific methods such as [illegible] prospecting. With the aid of the excellent outline provided by Mr. Hall in his more or less broad survey of the district, [illegible] progress should be made towards a [illegible] investigation of its mineral deposits and further discoveries should be greatly facilitated.

It is plain, therefore, that something more than a new process is required to save the Murchison goldfields, though it may render considerable assistance.

THE PROCESS DESCRIBED.

Explaining the process Mr. F. Humphreys writes: "The auriferous antimony mines of the Transvaal have been, without exception, unremunerative as gold producers on account of the unparalleled refractoriness of the precious metal. Unlike refractory ores containing the sulphides or arsenides of other base metals, antimonial ores, although after subjection to the most thorough calcination, indeed perhaps containing only 1 per cent. or less of antimony, still continue to embrace the gold contents against all attacks of either amalgamation or cyanide. The actual results on an average sample of unroasted ore, after subjecting to both amalgamation and cyanide, gave a total extraction of about 9 per cent.

A sample of the same ore after calcination and practically eliminating all the antimony, only gave up a total of 11 per cent. of its gold, thus showing that the calcination only improved the extraction by about 2 per cent.

The antimony belt of the Murchison Range carries anything from 10 to 50 per cent. of antimony in the form of sulphide (partially or wholly oxidised towards the outcrop), and from 5 to 50 dwts. of gold over 36 inches up to many feet in places.

By means of the Herrenschmidt calcination furnace, the whole of the antimony can be removed with the exception of 1.5 per cent. on an 18 per cent. to 20 per cent. charge, at a cost of only 5 per cent. to 6 per cent. of charcoal or gas coke. The antimony then passes over in the form of the volatile oxide and is collected in sublimation flues. This substance is the "antimony white" of commerce, and a valuable substitute for white lead. It is perfectly harmless from the paint-worker's point of view, and forms an excellent "body" in the manufacture of paints and gives it the additional property of not darkening with age, as in the case of lead paints.

The residual ashes from the above process contain the gold, and if now they are brought into intimate contact for a short while at the dullest red heat with a minute percentage of sodium carbonate, a peculiar reaction takes place. In the two samples I have before me the material has changed from a dirty grey colour to a bright salmon, and the latter is now perfectly amenable to the ordinary cyanide process.

Professor Stanley, of the Transvaal University, in his report on the investigation of my process carried out by the Mines Department, has by this means secured an extraction of 87.5 per cent. of the gold contents, and has proved that the cyanide consumption and precipitation in the zinc boxes is also quite satisfactory.

The Coming Oil Shale Industry of South Africa.

SOME NOTES ON RECENT DEVELOPMENT—CENTRAL REFINERIES—ATTRACTIVE INVESTMENT POSSIBILITIES.

By F. W. Girdler-Brown, M.Inst.M.M., M.S.A.Inst.E., A.M.I.N.A., etc.]

In a paper read by Professor Dobson before the S.A. Institution of Engineers in November last he alluded to an oil shale industry, and said: "The African Oil Corporation has already obtained satisfactory results from the trial tests made with their shales shipped to Pumpherston, in Scotland, all of which tests proved that a valuable oil and oil refining industry can be permanently established in South Africa on a sound financial basis." My own personal investigations during the past three months confirms this opinion, but much more important are the opinions given by that eminent expert, Mr. Cunningham Craig, B.A., etc., and the late Dr. Alexander Blair. During many discussions with engineers and others on the subject, I am struck with the frequency of the remarks, "but experts have told us that South Africa is geologically impossible as far as striking oil is concerned," alluding to Mr. Cunningham Craig's statement that it was doubtful if oil wells would be found in the areas he had examined. This remark did not apply to the oil shales and torbanites inspected by him; on the contrary, his report was not only encouraging, but in dealing with the torbanites he especially reported on in the Mooifontein-Grenfell areas—a recent local flotation—he expresses the opinion "that with their excellent site on the railway, its proved coal and torbanite seams, they have every prospect of successful working and high profits for many years to come," and goes on to say: "The average yield of oil in Scotland is about 22 gallons per ton, the Mooifontein-Grenfell area should give at least 60 gallons per ton of a much better oil. He estimates mining costs of the composite seam, coal and shale, at 8s. per ton, and that it is quite evident that the industry will have a great advantage over the Scottish shale industry with a cost of from 13s. to 15s. per ton of shale delivered to the retorts.

The Cunningham Craig Report.

In the year 1913 the Union Government secured the services of this gentleman to examine and report on the oil and oil shales of the Union. Mr. Cunningham Craig's eminent position among oil technologists is well known, and during the war the Imperial Government engaged him in company with the late Sir Boverton Redwood to advise them on the subject of the oil resources of the Empire. His report on the oil shales of the Transvaal and Natal can be seen at the Government offices, and it concludes as follows: "All evidence to hand at present leads to the belief that an oil shale industry has good prospects of proving successful, and I would urge that no effort should be spared to ensure that a fair test of its possibilities be made." In the year 1915 Dr. Alexander Blair (since deceased) spent several months on the properties of the Union Oil Corporation, and carried out a considerable amount of work in opening up the shale seams by means of adits and cuttings. Owing to his sudden decease, and no doubt influenced by the war, this report was never published. Many extracts have been made from it, and all those I have seen without exception confirm Mr. Cunningham Craig's opinion. A large number of samples were taken by Dr. Blair and assays were made of them by several well-known oil chemists at Broxburn and Oakbank, in Scotland, as well as by Mr. J. T. Norman, of the Central Laboratory in London. The results range from 25 to 47·5 gallons per ton, with as high as 57·8 lbs. of ammonium sulphate. In speaking of the widths, Dr. Blair said: "We have exposed a width of 9 feet, but more shale still remains (in the foot). I am satisfied that an immense body of shale exists in the farms under review." The Royal Dutch Corporation are working in the districts in which Dr. Blair carried out his preliminary investgations, and have, in fact, extended his workings in many places, with, it is understood, confirmatory and satisfactory results. This statement of facts should be a complete answer to any doubts as to what the experts thought of the possibilities of an oil shale industry.

Oil Shale Occurrences.

Before going on with the subject of estimated cost and profit I will now deal with the occurrence of the oil shale and coal beds of the Wakkerstroom and Ermelo districts. The geological conditions are well known, and in this large area there are few, if any, serious problems for the miner to solve. According to the latest geological survey this area belongs to the Ecca series of the Karoo System; this series has again been sub-divided into three sections, known as the upper, middle and lower beds. The middle beds contain the coal seams which are worked in various parts of the Transvaal and Natal. From three to four seams of coal are easily found and the work of the Royal Dutch officials have located as many as 12 seams in the series. Near the top, about 200 feet above the top seam of coal, is found the main seam of shale from which the best results have been obtained. The shale horizons have not yet been correlated on the various farms and a second or lower seam of oil shale may yet be proved. The opinion is held by all the best known authorities that the geological conditions are favourable for the unbroken continuity of these beds of coal and shale over an area extending from Utrecht to Ermelo, an area of great magnitude. The beds are practically horizontal and very considerable in width; sections have been made and aneroid levels taken over very great distances proving the continuity—and as far as possible by these limited means the correlation—proving that the shale beds may on one farm be 15 to 20 feet in thickness and thins down to 20 inches on another adjoining farm. The research work carried out by the big corporation at present in the district is very thorough and valuable, and while I do not of course know their values, I am of the opinion that they consider them satisfactory. Many erroneous ideas have become prevalent with regard to the tonnages contained in these areas, and one hears of many millions of tons per acre which is generally supposed to be payable. Nothing, however, can be known in this respect until actual development work takes place; from information at present available the payable oil seam appears to be lenticular, varying from a good working width of 3 feet 6 inches, sometimes with a parting of sandstone shale or blaes, with an additional pay band on the footwall. In some instances a large body of shale is found, varying from 12 to 20 feet, in which the pay band is again found to be a lenticular one of from 20 to 30 inches. Development will no doubt disclose unpayable areas owing to the varying widths, very similar to the lenticular reefs of the Far East Rand. It is with considerable diffidence that I venture an opinion at this stage, as knowledge can only be obtained by actual development work, but I feel bound to utter this warning by reason of the extraordinary figures that are often quoted as regards tonnages. Mr. Thomas Wilson, of Edinburgh, who has had a life-long experience of oil shales, in a paper read before the Society of Chemical Industry, gives some sound advice. He says that "Shale is often unreliable, often like the prophet's figs—when good it is very good, and when bad, very bad—and what may be the principal shale in one district may be useless in another. His experience is that values improve in depth and refers to a 12 gallon shale at the outcrop becoming a 20 gallon shale farther in (adit working"). The sum of the above evidence indicates that nothing but careful development work will prove these areas, that poor sections must be expected, and, like the Far East Rand, a large claim area is necessary in order to ensure establishing a payable mine. I make no attempt at this early stage to deal with the more scientific side of the research work necessary. Quite recently, I am informed, evidences of marine fossils have been found. There is without doubt a very fine field for our industrial chemists to assist the miner and geologists in laying bare the secrets of nature in order that the industry may start on a correct basis with the least possible initial error.

The Ermelo District.

Turning again to the report of Mr. Cunningham Craig on the Ermelo district, we find that he is so well satisfied that no doubtful note is struck, he says: "Undoubtedly the quality of the seam exposed is excellent, true, the thickness is only 18 inches, but lying as it does, in contact with the coal seam of 22 inches, a workable width of 3 feet 2 inches is a good proposition." Adit workings, cuttings and borings have proved this composite seam over a very large area, and there would appear to be a very bright future before the company which is pioneering this industry by commencing work very shortly. The mining facilities throughout the whole area may be said to be nearly ideal, in very few cases will shafts be required, and then only small ones of a few hundred feet in depth for ventilating purposes. Situated as the seams are (in most cases, some distance above the lower levels of the valley, adit workings can proceed at such an elevation that all the crushing, retorting and distillation plant can be placed in such a manner that gravitation can be made the greatest possible use of. No expensive shaft equipment will be required and the work can be laid out to deal with any large quantities of water met by ordinary drainage methods. This is a great advantage on the score of capital as well as working cost, and as the shale is contained between a good strong hanging and footwall of sand-

OSBORN'S
—— TEN PRONG ——
BALLAST FORKS

AS USED BY
THE SOUTH AFRICAN
RAILWAYS
AND
MUNICIPALITIES

IMPORTANT.

The Blades of these Forks are not simply stuck into a socket, but are SOLID FORGED throughout and securely strapped and rivetted on to Ash Handles.

A TRIAL WOULD
CONVINCE YOU OF
THEIR SUPERIORITY

SAMUEL OSBORN
(S.A.), LIMITED,
Box 3162 JOHANNESBURG. 'Phone 4673
WORKS: CLYDE STEEL WORKS, SHEFFIELD.

[illegible] mining costs [illegible] I estimate not to exceed 6s. per ton, including a charge of 2s. per ton development redemption. This charge will, of course, depend upon percentage of payability and the amount of dead work done; the latter, however, should be small, although dykes are fairly common and the [illegible] faulting which causes considerable trouble in working flat reefs will be met with. Driving in the shale will not be quite so easy as it appears at first sight, as the texture is tough and the slip faces many and varied. A careful, intelligent miner, however, will after some experience soon learn the local conditions and make excellent and cheap footage. I have given these figures as the sum of 2s. per ton has been mentioned as the mining cost, which, after examination of the working faces, I consider decidedly too low. By making the figure 6s. per ton we err on the safe side.

The Question of Plant.

The President of the Colorado School of Mines in a circular he recently issued dealing with the oil shales of South Africa of whose possibilities he evidently has a good opinion says in connection with plant: "The main problems to be solved are: (a) The perfection of a retort of large capacity, fool-proof in operation, and designed on scientific principles that will produce the maximum amount of good oil; (b) the refining of the crude shale oil, not into a long list of chemical curiosities, but into a few standard products for which there is a steady market; (c) the co-ordination of the various elements so that as a business project the whole will be a success." American engineers have dealt very extensively with this subject of oil shale plant so that when the President says there is still a problem to solve it would bear out the opinion held that much remains to be done in this connection. We are fortunate in South Africa, in that from the bulk samples treated in Scotland we are informed that our shale is very similar to the Scottish, so that presumably the plant as used at Pumpherston can be taken as a basis. We are informed, however, by experts that every locality presents its own difficulties in this connection. To again quote Mr. Cunningham Craig in his estimate of extraction he gives us a probable refining loss of from 20 to 22 per cent.—a very big figure. In making estimates, a slightly lower one is used, as it is usual to work on an 85 per cent. extraction. There is, therefore, a very fine field for the chemical engineer in our midst, to give us the same satisfactory results in oil extraction as he has done in gold, viz.: 95 per cent. Already Johannesburg has taken the lead in this direction and in the Ironside process we may have the saviour of low grade oil shale properties. The designing of a plant for cracking and refining oil and dealing with the by-products is a matter of very great importance which it is not intended to deal with now; it is, however, interesting to know that I am informed the unit under consideration in the Wakkerstroom district represents a total cost of 2½ millions. This includes the whole outlay on buildings, etc., in fact the lay-out of a small village. It is, of course, well known that quite separate companies are formed for cracking and refining apart from the mining operations, and in some parts of the world separate pipeline companies are operating the transport. I venture to predict that the ultimate destiny of our oil shale industry will be in the direction of one or more central refineries, and that small mining companies with a modest capital of from £20,000 to £30,000 will erect their own inexpensive retorts at the adits mouth and pipe the crude oil to a central refinery by gravitation. There are some disadvantages in this method, loss of heat from the first retort, etc., but it is certainly the best way to commence operations, as the provision of capital for a complete refinery is not only difficult but uneconomical, and runs into very big figures. The success in recent years that has attended the operation of the Scottish oils is due to the fact that five out of the nine refining plants have been closed down and this work centralised. I have no doubt that if a few small companies were proceeding to-day on these lines—that the large company who are now making the momentous decision with regard to their plant would be considerably influenced if agreements could be entered into to supply them with crude oil. I am informed that arrangements have been made by a large chemical company to purchase the crude oil produced by the New Oil Shale Company just commencing operations at 1s. per gallon up to 25 tons per month. A capital of £20,000 would be sufficient to equip a mine and develop the reserves (with ordinary good fortune) of oil shale to feed the retorts of an installation to deal with 75 tons per day, equal to approximately 2,000 tons per month. Treating 2,000 tons per month at a profit of 10s. per ton would leave a distributable profit of £10,000 per annum, equal to a return of 50 per cent. The success of the small mine is, of course, entirely dependable upon the establishment of the central refinery, and arrangements would have to be made for a joint pipe line—or the central refinery would instal it and charge a rental for its use. Estimated revenue and expenditure on the basis of mining, treating and refining the products on 300 tons of oil shale per day, equal to 100,000 tons per annum: Estimated revenue (lower figure), £2; estimated expenditure, £1; estimated profit per ton, £1; estimated profit per annum on treatment of 100,000 tons, £100,000. The estimated cost of a plant to treat 300 tons per day is given by Mr. Cunningham Craig as between £40,000 to £50,000 (pre-war cost). It would be safe to take the cost of this plant to-day at £120,000, and allowing £30,000 for mine development and equipment a total capital of £150,000 would be the amount required. With fuller information gained from actual work, the data used in these calculations may require alteration (this applies particularly to percentage of payability developed), but the margin is so very considerable, especially on the present-day prices of the products that even if the estimated profits are halved, the return would still be a handsome one on the capital invested.

State Aid.

As mentioned earlier in these pages, the Union Government secured the services of an eminent expert to report and from the extracts quoted he recommends that the possibilities of an industry be tested. Would it not be possible for the Government to continue to assist in the good work they have already begun? The Mines Department have reported as favourably as is possible with the limited amount of work done, but in a business of such enormous potentialities, where deep research and investigation can be of much value to the geologist, miner and the investor, is it not possible to establish a laboratory in a central position on these fields in charge of a competent official to carry out the assays and assist with advice—not of course free—but at cost price? The Government can also assist in another direction and follow the most excellent example of the Commonwealth Government of Australia. The Commonwealth Oil Company has just begun the production of oil from shale and torbanite, and it is interesting to record that their first three months throughout averages 93 gallons to the ton of torbanite. The Australian Government in order to encourage the industry are paying a bounty of 2½d. per gallon on the first 3½ million gallons of crude oil produced, 2d. per gallon up to 5 millions, 1¾d. up to 8 million, and 1½d. each additional 5 million gallons produced per annum. In concluding this article, I would like to say that I am fully aware of its many imperfections. My object has been not so much to write a technical paper, but to collect the opinions of experts to place the facts before you for the case of a new industry. To those gentlemen whose data I have so freely quoted I tender my heartiest thanks. A new industry at this period of the country's history will be very welcome, and the case as submitted here is surely made for the beginning of active mining development work, which alone can decide its merits. That it offers almost the maximum reward, for a comparatively minimum risk of capital, is, I think, clearly proved.

The Improved Economic Position of Rand Mining.

MUCH-NEEDED REFORMS AND ECONOMIES INTRODUCED—"BIG CHEQUES" ABOLISHED—REDUNDANT MEN RETRENCHED—MANAGERIAL CONTROL RESTORED—IMPORTANT STATEMENT BY ACTING PRESIDENT OF THE CHAMBER OF MINES.

At the quarterly meeting of the Chamber of Mines this week, the Acting President, Sir Evelyn Wallers, made an important statement regarding the position in which the industry now finds itself as a result of the improved economic mining basis which has followed the recent upheaval. A statement of that position is the more easily given by reason of the extent to which the matter has been thrashed out and analysed before the Mining Industry Board. He said: The principal factors in the mining industry's improved economic basis are: First, the abolition of the cost of living allowance. This has been rendered possible by the steady fall in the cost of living. The increase in the cost of living at the present time, as compared with the pre-war cost, is only 18 per cent., and there is a definite tendency towards a further fall. The cost of living allowance of the daily-paid employees will entirely disappear as at the end of the current month, and I think it is reasonable to assume that before the end of the year it will have disappeared for all employees of the industry. In the case of the higher-paid officials it has already been cancelled. The officials did not participate in the cost of living allowance at as early a date as did the daily-paid employees; consequently, it is reasonable that the allowance should continue to be paid to the lower paid officials for somewhat longer than to the daily-paid employees. It should not be assumed, of course, that with the abolition of the cost of living allowance the wages of employees revert to the 1914 standard. As a matter of fact, the increases in basic rates of pay which have been granted since 1914, which still continue in force, mean an average increase in the rates of pay, excluding cost of living allowance, of at least 10 per cent. as compared with 1914 rates; while, in addition, employees have received many advantages since 1914, such as shorter working hours, extra pay for overtime, and holiday leave. The cancellation of the cost of living allowance is, therefore, not only a very important step towards placing the industry on a sound economic basis, but also a perfectly reasonable one.

Contract System.

Secondly, there is the new start that has been made with the contract system. For various reasons, the earnings of contractors on the mines had increased between 1914 and 1921 to an altogether excessive extent, and the mining companies were not receiving their fair proportion of the results obtained from improved appliances and conditions generally. The industry has now entirely cut away from the old system of contract, and has made a fresh start with the adoption of the principle of a "No Cost" contract with decided reductions in the amounts that can be earned by contractors. The industry does not desire to unduly penalise what is probably the most efficient section of its underground European force; but it was absolutely essential to bring within control the extraordinary increase in contractors' remuneration which had taken place in the last few years. You may have noticed that the Rockbreakers' Association has put before the mining groups various aspects of the position from the point of view of the contractors. Full consideration is being given to those representations.

Underground Work.

In the third place, the industry is now in a position to rearrange its underground work, so as largely to do away with the shibboleth of "one man one job," which had been creeping into underground work, although generally condemned by mining men, including many of the workmen themselves. The mine managements have no intention of placing an excessive amount of work on any individual; but the absurd position under which a miner would refuse to do rough repairs to pipes, or even timbering which formed an adjunct to his work, has been done away with. In doing so it is true a number of redundant Europeans have not been re-employed; but no one, not even the most extreme "anti-industry" witness before the Mining Advisory Board, has suggested that any industry should be compelled to employ unnecessary and superfluous employees. It is a mistake to think that the reduction in the European strength on the mines has been brought about by the replacement of Europeans by natives. The total number of Europeans who have been replaced by natives under the abolition of the *status quo* agreement is only 523, out of a total permanent reduction in the European strength on the pre-strike scale of operations of some 2,500—figures which prove the correctness of our contention that the important point in the abolition of the *status quo* agreement was the retrenchment of redundant men, and not their replacement by natives.

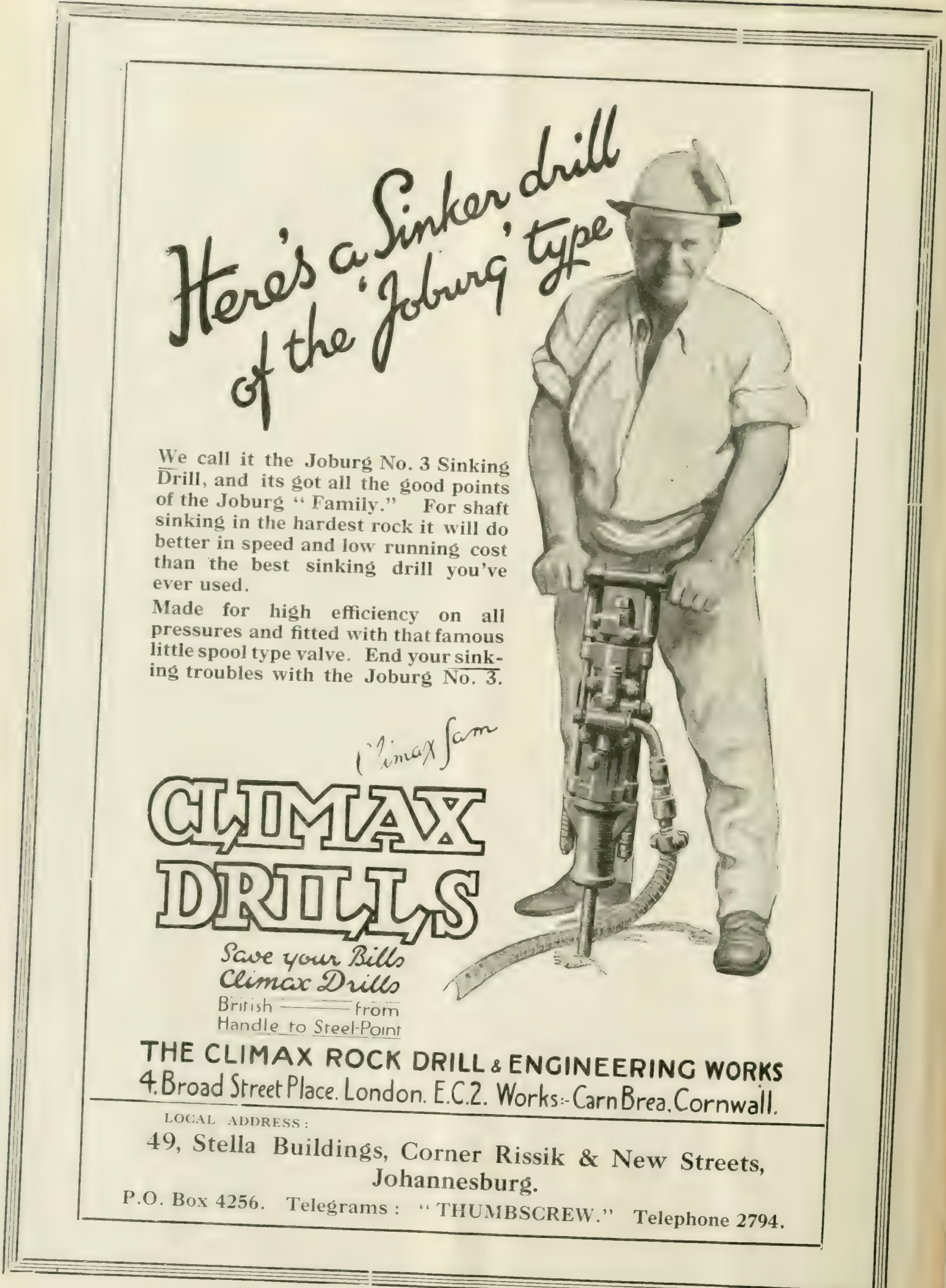
Control of the Management.

But of all the improvements in the basis of the mining industry which it has been possible to effect since the revolt by far the most important is the re-establishment of managerial control. You are well aware of the extent to which trade union interference, and more particularly the interference of shaft stewards and works committees, rendered nugatory the efforts of the mine managers to maintain discipline and secure efficiency on the mines. These artificial shackles on the well-being of the industry have now ceased to exist, and it will be our earnest endeavour to resist any attempt at their reimposition. In saying this, however, I do not wish any misunderstanding to be created; it must not be thought that the mining industry has any intention of adopting an unreasonable attitude towards its employees *vis-a-vis* their organisation into trades unions. In the speech of the president of the Chamber in March certain conditions under which the industry would continue recognition of unions were laid down, and it was alleged in some quarters that those conditions were unreasonable, and could not be accepted by any self-respecting trade union. We had no doubt that the conditions were eminently reasonable, and in no way dictatorial or autocratic. And the fact that they have been accepted by the oldest trade union of mine employees (the Engine Drivers' Association) and by the youngest trade union (the Rockbreakers' Association), and that one of the oldest trade unions in the world (the Amalgamated Engineering Union) has accepted all but two of the conditions, and is anxious to discuss the latter with the mining groups, is, I think, sufficient answer to the charge of unreasonableness, which I am afraid is but another instance of that eagerness to place the mining industry in the wrong with which we are so well acquainted. It is entirely right and reasonable that the employees should be represented by their trades unions in the negotiation and settlement of the broad principles of their employment. But, as I have already stated, the industry is determined that the mine managers will be masters in their own house, and not subjected to the interference in matters of management by the representatives of the men, any more than they should be unduly interfered with in the exercise of those functions by their head offices or by the Chamber of Mines.

GOVERNMENT EXAMINATIONS.
METAL. RESULTS, 1921. COAL.

Total METAL MANAGERS Certificates
Granted in S.A., 1921 36
Secured by Students of Messrs. LUCAS & WOLFE .. 21
Balance for S.A. .. . 15
7 COAL MANAGERS Certificates obtained in 1921.
Total OVERSEERS Certificates (Metal and Coal)
Granted in S.A., 1921 61
Secured by Students of Messrs. LUCAS & WOLFE .. 25
Balance for S.A. 36
Total SURVEY Certificates
Granted in S.A., 1921 11
Secured by Students of Messrs. LUCAS & WOLFE .. 9
Balance for S.A. 2

C. D. LUCAS & B. E. WOLFE,
MINING ENGINEERS
OFFICES & LECTURE ROOMS: PERMANENT BUILDINGS.
Postal Address: Box 6301. JOHANNESBURG



Here's a Sinker drill of the 'Joburg' type

We call it the Joburg No. 3 Sinking Drill, and its got all the good points of the Joburg "Family." For shaft sinking in the hardest rock it will do better in speed and low running cost than the best sinking drill you've ever used.

Made for high efficiency on all pressures and fitted with that famous little spool type valve. End your sinking troubles with the Joburg No. 3.

Climax Sam

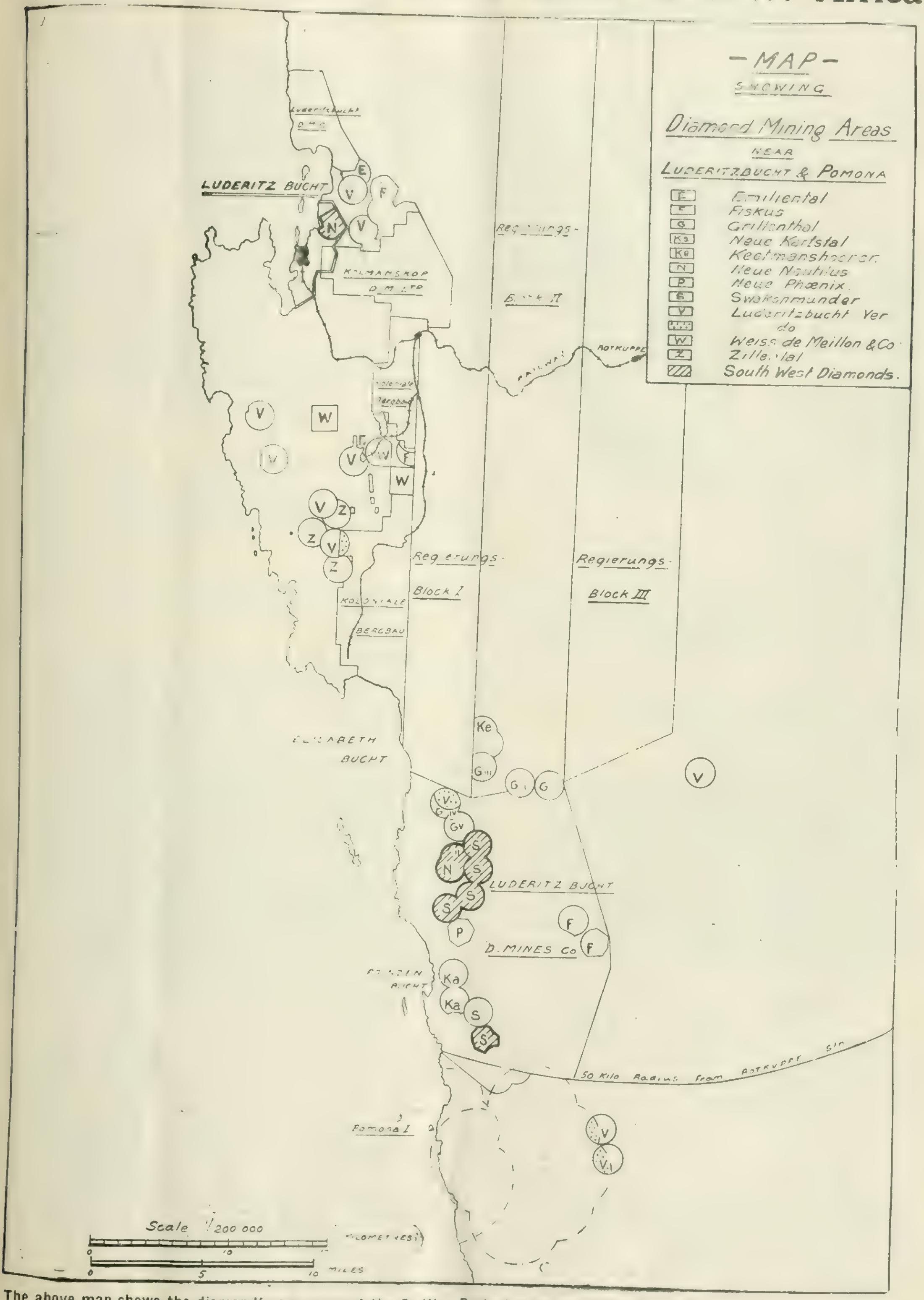
CLIMAX DRILLS

Save your Bills
Climax Drills
British from
Handle to Steel-Point

THE CLIMAX ROCK DRILL & ENGINEERING WORKS
4, Broad Street Place. London. E.C.2. Works:- Carn Brea, Cornwall.

LOCAL ADDRESS:
49, Stella Buildings, Corner Rissik & New Streets,
Johannesburg.
P.O. Box 4256. Telegrams: "THUMBSCREW." Telephone 2794.

The Consolidated Diamond Mines of S.-W. Africa.



The above map shows the diamondferous areas of the S.-W. Protectorate formed into one big consolidation of interests. which is now about to resume operations owing to the improved demand for diamonds. Work was suspended in May. 1921.

A wire from Windhoek states that work is first being resumed on the mines of the Luderitzbucht area. and native labour is being recruited.

PIT HEAD PULLEYS

GIMSON Pit Head Pulleys are built right to serve right. They consist of cast iron rims and bosses, securely cast on to wrought iron round arms. The bosses are strengthened with steel rings, shrunk on each side, and are truly bored and keywayed. They can be supplied from stock, with either U or V shaped grooves. Particulars of sizes, etc., will be gladly sent on request.

Sole Agents for South Africa:

BARTLE & COMPANY, LTD.

Loveday House Box 2466 Wires: "FAGGOT" Johannesburg

And at Box 444, Kimberley — And at Box 1228, Durban

ROBINS BELTS

¶ For Belt Conveyor Use:
"No. 2500"
"Durabelt"
"Universal"
"Supremus"
"Equator"

¶ For Belt Elevator Use:
"Rocobeco"
"Everwear"
"Special"

¶ Among the above there is a grade of Robins stepped-ply or straight-ply belt for every purpose.

¶ The Robins "Durabelt" and "Universal" Belts are the most widely used brands of conveyor belt in existence.

¶ South African Stocks of "Durabelt" carried in all standard sizes.

Robins Conveyors (S.A.), Ltd.
(Head Office: Robins Conveying Belt Co., New York, U.S.A.)
BOX 4736, 'PHONE 4182, JOHANNESBURG
BOX 811, 'PHONE 3383. DURBAN

Approved by Mines Dept., Home Office and Board of Trade

THE "PROTO"

SELF-CONTAINED OXYGEN BREATHING APPARATUS

for Rescue and Recovery work in Mines after Explosions, etc.

ADOPTED BY ALL THE PRINCIPAL RESCUE STATIONS IN THE UNITED KINGDOM, AND BY MANY COLONIAL AND FOREIGN GOVERNMENTS

SMOKE HELMETS

of various patterns.

For Gob Fires and other Short distance work in Collieries.
Simple. Light. Portable.

THE "NOVITA" OXYGEN RESUSCITATION APPARATUS FOR THE APPARENTLY ASPHYXIATED.

RESPIRATORS FOR ALL PURPOSES. OXYGEN COMPRESSION PUMPS. GAS ANALYSIS APPARATUS. ELECTRIC LAMPS, Etc.

SIEBE, GORMAN & CO., LTD. "NEPTUNE" WORKS and
187, WESTMINSTER BRIDGE ROAD, LONDON, S.E.1, ENGLAND.

Cables: "Siebe, London." Codes: A.1, A B.C. 5th, Western Union, Bentley, Lieber, Marconi, Engineering and Private.

OUTSIDE DISTRICTS

Lydenburg District Gold Fields.

A POSSIBLE OPENING FOR OUT-OF-WORK MINERS.

The district of Lydenburg has long been known for its gold-bearing reefs, and, to a lesser extent for its alluvial gold fields.

The whole of this portion of the Eastern Transvaal is covered by eruptive and plutonic rocks, forming high ranges of hills and mountains and deep and narrow valleys. While the general lie of the rock masses is nearly horizontal, the whole of the strata is cut up into segments by dykes mostly of an age subsequent to that of the original deposits. These dykes, diabase, diosite and syenite cut across the older formations in every direction, and are easily discernible by reason of their hardness as they form razor backs, sometimes parallel with the valleys, but more often running across them, usually in an east and west direction. At the junction or contact of the dykes with the country rock lie zones of gold-bearing banket, in some cases of extraordinarily high values, and the lucky finders of such zones reap in a few months a harvest which the average worker on a mine would not get in a lifetime.

An Open Working in the Lydenburg District.

Within the last three months a man working in the district has obtained 500 ozs. of gold from a slute, and he is still crushing 10ozs. rock from the same place. This man is not a miner and was out of work when he tried his luck on the fields. It must not be assumed from this that every man who cares to buy a railway ticket to Lydenburg, and who pags out a claim, will at once become rich. Far from it. The instance above quoted is interesting only as showing the possibilities of these fields, which approximate more nearly in probable returns to the Rhodesian gold fields than they do to the Rand banket mines. Still a number of men have and are doing quite well here in a quiet way. The ore-bearing bodies are of two distinct kinds quartz of a glassy kind and sugary quartz.

The glassy quartz beds lie conformably with the ordinary lie of the country—that is to say, nearly horizontal. They are thin, anything from three inches up to 15 inches in thickness and with a matrix of haematite iron ore. In places this haematite becomes hydrated and is then limonite. The quartz is very hard in texture and breaks like glass under the hammer. The ore body is very pyritic and it is common to see lumps of pyrites up to a pound weight embedded in the reef.

The roof and floor (one can scarcely write of hanging and footwall in this connection) are both of the same composition—felspar with considerable quantities of iron. In milling, the presence of this argillaceous mixture gives considerable trouble, since the stamps pound the stuff into a finely divided mass and it becomes a puddle and sticks like glue to the stamps. The writer has recently had experience of this in actual practice, and the sound of sucking, like a pump drawing air invariably meant the stoping of the mill and a clean out of the clay from the mortar boxes. Usually a light feed and a good mixture of quartz with the ferruginous matrix of the ore minimised the difficulty of crushing.

Early Mill in the Lydenburg District.

The Two Reefs.

The two horizontal reefs, known as the Button and the Davison respectively, from their discovers, are not consistent gold carriers, but are on the contrary, very patchy. Like the Irishman's pudding, they are good in places. A sample assayed a few days ago by the writer, which came from the Button reef, gave 88dwts. over 15 inches. Another sample taken 50 feet away gave a trace, and still greater divergencies in value have been met with. However, the values met with in this reef are sufficiently good on an average to make possible the opening of a number of small properties on a tiny milling basis and a few are doing very well.

The Davison reef has been, on the whole disappointing. This ore body lies at from 400 to 500 feet below the Button reef in this district. Occasionally the reefs give good milling values, but the blanks are far more numerous than the good places. Several years ago a company—the Nooitgedacht G.M. Company—worked both reefs on the farm of that name. They had a 30-stamp mill and cyanide plant and recovered over £80,000 worth of gold. At a later date tributors took over the property and did exceedingly well.

It has been lying dormant for many years now, but it ought to attract attention from men with limited capital, since it is an adit proposition and has sufficient water power to run a big mill if necessary.

At Mount Anderson a 10-stamp mill is at work and is recovering a fair amount of gold from the reefs in this horizon. A few 5-stamp mills are at work in the valley between the two properties above named. It is not these reefs, however, which attract chiefly the attention of the small man who usually goes on the get-rich-quickly stunt and looks for stuff giving ounces to the ton.

Other Occurences.

Apart from the two horizontal reefs mentioned, a vast number of " leaders "—to give them the name used in the district—are found running at all angles across the formation.

They belong to no special horizon, but are found all over the country, but usually between the Button and the poorer reefs. They are all steeply inclined, from 60 degrees to vertical. The ore body is a sugary quartz with iron and clay—very similar in composition to the regular reefs. The enclosing strata are the felspar through which they cut in different directions.

These leaders do not go very far down, neither do they extend very far in a line or direction from 100 yards to 600 yards would be almost an extreme length for them—and in depth nearly all petre out at less than 100 feet. They are undoubtedly zones of secondary enrichment, and while only a few carry large quantities of gold, these latter when rich will easily run into several hundred ounces to the ton.

They are very thin—from ½in. to 9in. in thickness—as a maximum. The gold contents are distributed within definite horizons as regards depth. For example a leader recently discovered gave very high values along a line four inches in depth and at three feet below the surface. On the surfave were no values. Below the three feet were no values, until a depth of eight feet was reached, when very high values were found. Below this at 18 feet another zone was discovered and thereafter only blanks. From this leader, 30 tons of the rich reef were mined in all, and the value of gold recovered was £1,500 standard.

This does not, however, exhaust the mining possibilities of the district, since a number of men are making a good living by sluicing the alluvial. This form of mining appeals strongly to men with no capital and little mining knowledge, because all the outfit necessary is, say, 15 feet of sluice box made of flooring-boards and about three feet wide, and fitted with riffles. A few Kaffirs and shovels do the rest. Pockets of gold are met with occasionally and add to the zest of this form of gold seeking. Nuggets up to 2lbs. in weight have been recovered from the boxes by lucky miners.

It will be seen from the above that the gold-bearing country is fairly well distributed, and gives room for different kinds of mining as well as being suitable for men with capital as well as the poor man.

W. H. JONES.

Alluvial Diamond Returns.

The diamond returns from alluvial diggings in the Western Transvaal for May show an output of 6,126 carats, of a value of £37,385, a decrease on the output of the two previous months. The finds are all on diggings in the Wolmaransstad and Bloemhof districts, except a few unimportant finds in the Potchefstroom district. The finds on diggings in the Barkley West district amount to 3,810 carats, of the value of £24,839, and Herbert district 216 carats of the value of £1,304.

Coal in the Waterberg District.

Remarkably encouraging results have been declared following recent borings in the Waterberg district for coal. From boreholes put down by the Irrigation Department, coal measures have been struck at shallow depth over an area of 35 square miles. The sections obtained included a series of seams of considerable thickness. Dr. Moir has reported that some of the samples were the most bituminous he had seen for many years, and possibly the most bituminous in the Union.

AFRICAN IRON & STEEL PRODUCTS
LIMITED

SPECIALISTS IN AND MANUFACTURERS OF
TUBE MILL LINERS,
ENDS & SCREENS, Etc.,
MASS PRODUCTION.

AIR BRICKS, SASH WEIGHTS AND OTHER BUILDERS' AND PLUMBERS' SUNDRIES.
REPETITION WORK IN IRON AND SEMI-STEEL.

Works : DENVER STATION.
— Telephone 64 Cleveland.—

Head Office : 180, Main Street, JOHANNESBURG.
Telephones 5770 and 3248.

Telegraphic Address : " MAUBROWN," Johannesburg.

A New Oil Shale Flotation.

PROMISING LARGE AREA INVOLVED.

An interesting new oil shale flotation, known as the Slangapies Coal and Oil Shale Exploration Co., Ltd., has Mr. F. W. Girdler Brown as its moving spirit. The directors are all well-known business men and the coal prospects of the property make an attractive proposition without taking the valuable oil shale rights into account at all. The capital now being raised will be utilised to prove the value of the farms by means of drilling, tunnelling, and, where necessary, shaft sinking. On the completion of this work the whole of the ground will be sub-divided into mining areas suitable for the formation of subsidiary companies. Highly encouraging reports have been made by the following gentlemen: Mr. E. H. Cunningham Craig, B.Sc., adviser to the Imperial Government, the late Dr. Alexander Blair, who spent six months on the farms, Dr Hans Merensky, Dr P. Wagner, by authority of the Minister of Mines, Mr. E. H. Hunt, M.E., 14 years colliery manager, T. G. Colquhoun, M.I.M.E., etc., colliery manager, and F. W. Girdler Brown, M.I.M.M., M.Amer.Inst.M.E., etc. Extracts from these reports are appended to the prospectus. From the report made by Mr. F. W. Girdler Brown, M.I.M.M., M.Amer. Inst.M.E., etc., we take the following: The shale seams throughout the whole of your area are lying nearly horizontal in the foothills of the mountains. The hanging and footwall is a strong sandstone, and the conditions of mining should be nearly ideal. I estimate the cost of mining—including development redemption—should not exceed 6s. per ton. The work now being carried on by the Royal Dutch Oil Corporation, *i.e.*, cuttings, shafts and adits, at approximately 300 yards intervals over a continuous distance of 5½ miles is a continuation of the work begun by the late Dr. Blair, and I am satisfied that the results are in keeping with the values previously obtained, which it may be taken is *not less than* 30 *gallons* to the ton. It was from this area that the bulk sample of 60 tons was sent to Scotland for treatment, which yielded 31·75 gallons to the ton. I estimate the revenue and expenditure as under: Taking the average value as obtained from the bulk of sample of 60 tons, viz., 31·75 gallons per ton, on an 85 per cent. recovery the yield would be 27 gallons per ton. On the basis of mining, treating, and refining, the products of 300 tons of oil shale per 24 hours, equal to 100,000 tons per annum. Estimated revenue, per ton, £2 (taking lower figure); expenditure per ton, £1; profit per ton, £1. Estimated profit per annum on treatment of 100,000 tons is therefore £100,000. No good purpose will be served by making calculations with reference to the tonnage of shale and coal in areas comprising the company's property, suffice it to say that the whole estate is practically 40,000 acres, and estimating the seam of both coal and shale at only three feet in width, the quantity runs into many millions of tons. Your property is a very extensive one, capable of carrying several subsidiary companies after the exploratory work necessary has been carried out. In the coal alone the assets of your company are very considerable, and it will be noted from the reports of the analysis that the quality of the samples tested is eminently satisfactory. The property merits the fullest investigation possible and fully justifies the raising of the capital necessary to prove its value both in coal and oil shale.

Alluvial diamonds produced in the Pretoria district in May totalled 1,343 carats, valued at £3,184, made up as follows: Bynestpoort, 863 carats (£1,244); Kameelfontein, 458 carats (£1,896); and Roodekopjes, 20½ carats (£44). In all, 222 diggers were at work, 110 of whom registered finds. In the remainder of the Transvaal, diamonds totalling 6,126 carats were found during May, valued at £37,385. Diggers numbered 2,798, of whom 896 were successful.

Letters to the Editor.

STATE AID FOR PROSPECTORS.

To the Editor, *S.A. Mining and Engineering Journal*

Sir,—The *Daily Mail* of 27th inst. publishes an interview with Mr Harry Graumann, in which he gives reasons for the disappearance of the old types of prospector and suggests legislative measures to attract him back. Whilst thanking Mr. Graumann on behalf of the scattered remnant of prospectors, I ask him to excuse me if I point out where, in the deplorable slang of the circus, he has "missed his tip."

1. In respect to Government ground, he states that the number of discoverers' claims (100) awarded to a finder is too small to attract backers. This is only true with respect to a mine of the Rand's deep level type, requiring heavy capital and a fifth of a generation for development and equipment before gold can be produced. In the case of reefs with an almost vertical dip, 20 claims, or 1,000 yards, on the strike are enough to keep a 10-stamp mill going for 14 years, assuming 18 inches average width and a depth of 400 feet, and the same holds good for a flat reef, since claims are 400 feet wide. To measure quartz mines in units of the Johannesburg order of magnitude is about as practical as measuring a journey to Pretoria in terms of light-years.

2. Mr. Graumann implies that the cost of licences is unsupportable. This is not the case. Mining commissioners grant all sorts of relief where there is reason for doing so, and there is no cause for complaint on this score.

3. The above applies to Government ground. On private ground a huge grievance exists, which Mr. Graumann does not touch on. The landowner can beacon off two mynpachten, each one-tenth of the portion of the farm which is to be proclaimed, and the prospector pays double licence on ground pegged outside this reserve. The mynpachten, if chosen judiciously in dissected country, include nearly all the accessible faces and watercourses, and hence the balance of the farm is not worth attention. This could be remedied by commuting owners' rights or loot for a small tribute.

4. The chief reason for the decay of original research for gold is the want of financial support. Rand banket is the dominant attraction. If a little money were ventured in exploring the extensive schist areas of the N.-E. Transvaal, great results would follow, as certainly as that a borehole in certain known areas would strike the Main Reef series.

5. If, as Mr. Graumann says, the would-be prospector and his backers laugh and jeer at the "meagre prospect" of getting 100 claims, I think, with regard to the laughter, they are very easily amused, and with regard to the jeering, they show questionable taste.—Yours faithfully,

C. HOWARD

33, Steytler's Buildings, Johannesburg,
28th June, 1922.

RHODESIA NATIVE TIMBER CONCESSIONS,
ELOFF STREET EXTENSION,
P.O. Box 5530. JOHANNESBURG. 'Phone 2671.

SPECIALITIES. Rhodesian Teak for Sleepers, Flooring, Lagging, and all Mining purposes; is impervious to water, unequalled for Strength and Durability, and low in price.

Rhodesian Mahogany. Specially recommended for Truck Frames, Guide Blocks, Furniture, etc.

PRICES AND ESTIMATES ON APPLICATION.

TRADE MARK
SIMPLEX
INSPECTED MANUFACTURES

THE MARK OF
QUALITY

WARNING: In numerous instances other and inferior grades of conduit are being supplied by certain unscrupulous [illegible] against requisitions for Simplex conduit. It should therefore be noted that the sale of other makes of conduit where "Simplex" is specified is illegal, judgment to this effect having been given in the Courts.

PROTECTION: As a safeguard for your interests in this direction every length of genuine Simplex conduit now bears a reproduction, in transfer form, of the Company's trade mark, which is to act essentially as a guarantee of Simplex origin.

GUARANTEE: When ordering conduit therefore, order Simplex conduit and see that every length bears the little red mark: it is YOUR GUARANTEE that the conduit supplied is Simplex conduit—the durability conduit.

ADVANTAGES: Besides guaranteeing the source of origin, the mark also indicates a conduit manufactured from only the highest grade steel, and whose every length is specially inspected and tested for smoothness of bore and accuracy of internal and external diameters. A special process of stoving after enamelling gives a protective covering of exceptional durability which is at once both tenacious and elastic, and possesses good insulating properties. The threads are well cut AFTER enamelling and are protected by cardboard caps against damage during delivery.

Write for further information or descriptive lists dealing with Simplex Conduits, Conduit Fittings, Distribution Boards, Electric Lighting Fixtures, Water-tight Fittings and [illegible] Heating and Cooking Apparatus.

Sole Selling Agents for the Union of South Africa:

RICE, WILSON & HERD,
Standard Bank Chambers,
Commissioner St., JOHANNESBURG.

P.O. Box 930 Telephones 2299 2300
Telegrams: "TANTALUM."

Advertisement of Simplex Conduits, Limited, Birmingham, England.

MILLAR DENNIS
ORIGINAL MAKERS OF

"BRADFORD INVERTED"

PLUG COCKS.

SOLE AGENTS:

GEO. CRADOCK
—AND CO. (S.A.), LTD.—

75-77, CULLINAN BUILDINGS.

P.O. Box 316. Telephone 539.
Tel. Add.: "ROPES."
JOHANNESBURG.

REID BROS.
— (S.A.), LIMITED. —

Sole Agents for:

CARRON COY.—HAULAGE GEARS, Etc.
ANDERSON, BOYES & COY.—ELECTRIC COAL CUTTERS.
HARDY PATENT PICK COY.—"HARDIAX" AIR COAL CUTTERS.
BLANTYRE ENGINEERING COY.—SCREENING PLANT.
WM. ARNOTT & CO.—CORNISH AND LANCASHIRE BOILERS.
QUASI-ARC ELECTRIC WELDING APPARATUS.
SMALL & PARKES—BELTING, PACKING, Etc.
FINNEY PATENT HAND PUMPS.
WELDLESS STEEL CHAINS.
CHAPMAN DOUBLE BALL BEARINGS.

JOHANNESBURG.
P.O. Box 802 'Phones 6070/1
AND AT DURBAN.

The South African Mining and Engineering Journal.

HEAD OFFICE: 176-180 Stock Exchange Buildings (2nd Floor), Fox Street, JOHANNESBURG, Union of South Africa.

Telephone **913.** P.O. Boxes **963** and **4573.**

Cables and Telegraphic Address: "MINING JOURNAL"

ANNUAL SUBSCRIPTION RATES: Oversea, £2; Union of South Africa and Rhodesia, £1 10s.; Local Delivery (Town only), £1 6s., payable in advance.

AGENTS FOR GREAT BRITAIN AND AMERICA: Argus South African Newspapers, Ltd., Byron House, 82-85, Fleet Street, London, E.C. 4.

Copies of this Journal are obtainable at all Branches and Agencies of the Central News Agency, Ltd., at all News Agents and Railway Bookstalls throughout South Africa, and at the London Agency as above.

CONTENTS.

PAGE

Steady Progress at the Robinson Deep 1463

The Murchison Range Goldfield 1465

The Coming Oil Shale Industry of South Africa ... 1466

The Improved Economic Position of Rand Mining 1469

The Consolidated Diamond Mines of S.-W. Africa 1471

Outside Districts—

Lydenburg District Gold Fields 1473

A New Oil Shale Flotation 1475

Letters to the Editor 1475

Topics of the Week 1477

Share Market 1481

Congo Divide Mine 1483

The Union-Mozambique Negotiations Fail 1484

Trade and Industries Section—

The Week in the Mining Material and Engineering Trades 1487

TOPICS OF THE WEEK.

Doubling the Life of the Rand.

A very reassuring statement on the position of the Industry was made by Sir Evelyn Wallers at the quarterly meeting of the Chamber of Mines this week. Largely by reason of the thorough manner in which things have been hreshed out before the Mining Industry Board, he was able to make a very clear and definite explanation of the eforms introduced and economies effected in the Industry ince the recent upheaval. He showed that "big cheques had been abolished, redundant white men retrenched, and n adequate measure of managerial control restored on the mines. His actual remarks on each of these burning quesions are put on record elsewhere in this issue, and here we may extract from their context his remarks on the vital elation between cost reduction and the life of the Rand. On this all-important subject he said: "That the Industry, in its determination to place itself upon a sound economic asis, is not dealing with matters of small importance will be plain to you when I quote the following figures from a statement sent to-day to the Mining Industry Board in regard to the tonnage available on the Rand at various rates of working cost. This statement, which has been most carefully compiled, shows that at the 1921 rate of working costs (25s. 8d. per ton) the total tonnage available on present producing companies on the Rand is estimated at 316 million tons. At a working cost of 17s. per ton (the pre-war cost) the total tonnage available would be 544 million tons. In addition to this increase in tonnage, it is estimated that over 300 million tons are available in other areas of the Rand and would be brought within payable limits with 17s. costs. I do not suggest that an immediate reduction to 17s. per ton in working costs is possible, but the basis upon which we are now working has gone a great way towards the necessary reduction, and holds out the promise of its achievement in the not too distant future. Will anyone having the interests of South Africa at heart deny that the more than doubling of the lifetime of this huge industry, with the community dependent upon it not only in the Witwatersrand but throughout the whole country, fully justifies the efforts made by the Industry to attain that end?" The detailed statement explanatory of these figures is not yet available, but the globular totals quoted are sufficient to prove that the struggle to reduce working costs, with all its attendant tragic consequences, was in reality a fight to prolong the life of the Rand by more than doubling it and, therefore, in the interests of the whole economic superstructure of the country built up upon the Industry. Those are the plain facts of the case stated in general terms; they are equally applicable to individual mines. The profitable life of every mine from end to end of the Reef can be shown to be materially, if differently, affected by the altered conditions. It is a truism that if costs can be brought down near to pre-war level, not only will vast tonnages of low grade ore in producing mines be transferred from the category of "unpayable" to "payable" rock, but mines and areas now lying dormant and untouched may be converted into attractive investment propositions. What all this means to this community and the whole country need not be laboured.

Sir Lionel Phillips on the Industry.

Naturally Sir Lionel Phillips, at the Central Mining meeting in London, felt called upon to express his views on the present position of the Industry. He seems to have been in close touch with the trend of things on this side of late, and his speech gives a very fair summary of the position. According to the cables, he said the suggestion of differentiating between the mines would be a serious, if not a vital, blow to investment, if needless expenditure were forced upon enterprise for a philanthropic purpose. He thought that this reference to the Mining Industry Board had been hastily framed, and therefore did not fear a sinister consequence. He emphasised that the mines were owned by a vast number of investors, most of whom were non-resident in South Africa, and he warned politicians that ill-treatment of capital would bring its own punishment. Sir Lionel Phillips believed that the publication by the Chamber of Mines of the costs of production alone brought home to the Government and the people of South Africa, with the exception of the Labour leaders, the perilous condition to which the exactions of the State had reduced the Industry. After dwelling on the disastrous consequences of the refusal of Labourites to assist in carrying out the only effective steps to save the situation, Sir Lionel Phillips referred appreciatively to the healthier atmosphere on the mines since the resumption. He anticipated the Industry now would again enter the era of peaceful progress, but if real progress were restored the attitude that the Industry was able to stand anything must be altered. Sir Lionel need not fear that those on the spot are leaving anything undone to bring home to the Mining Industry Board and the Union Government the vital necessity for the reforms and economies now being effected, and for more sympathetic treatment of the Industry in the interests of the whole country.

The Mine Native Labour Supply.

The statement made on behalf of the Native Recruiting Corporation that the gold mines with one exception have a full complement of native labour has been shown to require considerable qualification. If it were absolutely true, of course, it would cut the ground from under the demand for the removal of the embargo on the recruiting of tropical natives. The truth of the matter was plainly put by Sir Evelyn Wallers at the Chamber of Mines meeting this week. He said: "There remains still one step necessary to place the Mining Industry on a permanent and sound basis, and that is the removal of the embargo on tropical natives. Every now and then the Industry finds itself in the position of having sufficient natives, but unfortunately that desirable condition only occurs very occasionally, usually through some special circumstance, and continues for only a very short time. For example, the tremendous influx of natives which has followed the recommencement of operations in April will very shortly be more than can be absorbed by the still not completely recovered industry. But with the reopening of the diamond mines and the revival of industrial prosperity in the Union, the shortage of native labour for the mines will again become more acute, and we shall be unable to work at our full capacity and absorb our maximum number of Europeans. It is impossible to expand the Coal Industry, or maintain full prosperity on the gold mines, without a permanently adequate native labour supply, and that can only be obtained by permitting natives from the natural sources of supply north of Latitude 22 deg. South to enter the Union, removing the present artificial blockade. The number of natives that would be required would naturally depend upon the local supply, and any importation would be subject to the interests of the Union natives being in no way prejudiced. As has been stated again and again by this Chamber, it is most difficult to understand the reasons which induce the Union Government to continue the blockade, or to refuse to permit the experimental introduction of 5,000 tropical natives recommended by the Low Grade Commission and by the Unemployment Commission. The removal of the embargo and the assurance to the Industry of a permanently adequate supply of native labour would set the corner stone of the improved economic structure now in process of achievement, and the Mining Industry and the community could look forward with confidence to a more natural, healthy and satisfactory condition of affairs than has prevailed for a very long time." It would be a graceful act by the Union Parliament to accede to this request before the close of the present session, and thus mark its sense of the seriousness of the crisis through which the Industry has passed and its approval of the efforts of those now engaged in putting it again on its feet.

Provincial Council Imposts.

The Provincial Executive has failed in its second attempt to carry the outrageous advertisement tax proposals, and its employers' tax looks like meeting a similar fate. Naturally the mines are offering strong opposition, and in an interview with the Executive of the Transvaal Provincial Council the Chamber of Mines protested in the plainest language against the proposal to levy a tax on employers of labour in respect of employees where more than five are in service. There is no disguising the fact that the Mining Industry will have to pay practically the whole of this tax if the proposal now before the Provincial Council is carried. At the Chamber of Mines meeting this week the Acting-President said: "Apart from the shortsightedness and general want of wisdom of those councillors who, in putting forward this tax, thus propose to take a very direct line towards increased unemployment, it is, without doubt, a monstrous thing that an industry like this, on which the well-being of the whole of the Union very largely rests to-day, should be subject to the attentions of a subordinate Legislature like the Transvaal Provincial Council. In the interests of all concerned we should not be in that position, and indeed, the Financial Relations Act Further Extension Act of 1921 supported that view and withdrew the power from Provincial Councils to impose direct taxation in respect of the product or the income or profits derived from mining operations. Of course, the present proposals are a different form of taxation to that from which we suffered at the hands of the Provincial Council before the amending Act, which I have just mentioned, was passed, yet, as you will readily see, the effect is practically the same. The Mining Industry, under existing legislation of the Parliament of the Union, is heavily taxed, both directly and indirectly, and it is the view of all thinking people that the burden should, if possible, be lightened, but, in any case, not increased, if the basis of the prosperity not only of this country, but of the Union as a whole, is to be more firmly and soundly established. Finally, in this connection I feel sure that if the community in general were required to bear its full proportion of public expenditure in which our Provincial Council indulges, there would be an immediate demand for a reconstruction of the powers of the Provincial Council."

The New Railways.

The debate on the new railway programme occupied a great deal of the time of the House of Assembly this week. Mr. Jagger, in an informative speech, gave some interesting statistics as to past construction: 1911, 527 miles constructed, cost £2,500,000; 1913, 794 miles constructed, cost £2,731,000; military lines during the war, 281 miles. Since Union, 1,569 miles had been constructed at a cost of £5,389,000. In addition, certain pre-Union lines had been constructed since Union, making a total mileage since 1910 of 2,476, at a cost of £8,463,000. The country was continually calling for railway development, said Mr. Jagger, but this had been held over on account of financial and other reasons. Now the railways were reaching normal equilibrium, consequently this programme for the construction of 1,847 miles, at a cost of four millions, was brought forward. Though the cost would be above pre-war rates, they hoped there would be a fall in prices during construction. He pointed out that many of these new lines were not going to pay full interest in the first year, but in a few years' time he hoped the burden would be reduced. The lines were selected from the points of view of pressing need and traffic development. If Parliament sanctioned the programme they would not proceed with construction on all the lines at once. The programme would be spread over four or five years, and three or four railways would be concentrated on and completed as rapidly as possible. As to Natal, he pointed out that they were making two lines which would be of great benefit to that Province—one from Kokstad and the other from Matatiele—that they were spending a large sum on the electrification of a section of the main line, and that they were also spending over £500,000 on Durban Harbour. Touching on the objections taken to the narrow gauge lines, the Minister remarked that if transhipment were properly worked, the cost need not be excessive. He referred to the great amount of traffic carried by a narrow-gauge line in South-West Africa, and also mentioned that, according to official figures, the average saving in constructing a narrow-gauge line as compared with a standard-gauge line was £2,000 a mile. Without entering on the vexed question of the merits of the standard-gauge *versus* narrow-gauge lines, this saving quoted by Mr. Jagger certainly furnishes a strong argument in favour of the Government's policy in the matter.

The Future of Johannesburg.

It is satisfactory to note that at last the Municipal Council of Johannesburg is waking up to the need for actively encouraging the establishing of industries in our midst in order to supplement the mines now on the wane. Mr. Crocker, the chairman of the Finance Committee, made an encouraging reference to the subject in his Budget speech this week. "My faith," he declared, "in the future of Johannesburg, as the premier industrial and commercial centre and market of South Africa, is unabated. The new economic standard recently established on the Rand will enormously assist the expansion of industry. . . . So far as potential industries are concerned, this Council has given an earnest of its intention to assist development and expansion wherever possible, by cheapening the cost of water to large consumers, by paving the way for a plentiful supply of electric energy in future, and in similar useful ways. As a distributing centre and market for the sub-continent the position of Johannesburg is commanding. It is for these reasons my belief in our city and its future remains in unabated force." It is devoutly to be wished that these fine words and promises will prove justified.

The Native and the Strike Weapon.

The Joint Council of Europeans and Natives, which gave valuable evidence before the Mining Industry Board the other day, weakened its case by hinting at the possibility of a native strike. The best informed white and native opinion scouts the idea, and our contemporary, *Umteteli Wa Bantu*, shows how groundless the fear is. It says, *inter alia*, "Of course a native strike is a possibility, but it is a very remote one. The mental balance of the enlightened native and his general stability of character do not give encouragement to the idea that employers may be forced to offer improved terms and conditions by a cessation of work. Moreover, there are few really educated and mentally developed natives who would assert that the raw mine labourer is not adequately paid for the services he gives. The native is not a fool. The white strike which failed so disastrously has left its lesson behind, and the native is quick to recognise defeat and to profit by it. There will be no strike of native miners so long as the mines give them better pay, better housing, and better general treatment than any other class of employer in the country. The wide difference between the wages of unskilled European and native workers is the chief source of native discontent, but it does not furnish a just cause for industrial war. It is a question of the most favoured nation, and mine natives should find considerable interest in the attempt to determine whether they are actually underpaid, and whether the wages paid to unskilled whites set a reliable standard."

Miners' Phthisis Research.

One of the most valuable publications of the S.A. Institute of Medical Research is entitled "Studies in Experimental Silicosis and other Pneumonokonioses," by Dr. A. Mavrogordato, Research Fellow in Industrial Hygiene. The work gives the results of Dr. Mavrogordato's researches in miners' phthisis. In dealing with methods of dust-laying he writes: "One is astonished at what has been done in the way of dust-laying on the Rand: the wonderful application of water, the special machines and the organisation for eliminating dust and tracking it to its source." Yet, notwithstanding all this, "there is still too much dust," and no more can apparently be done with water. Theoretically, it is pointed out, the dust can either be diluted or blown away, or a dust arrester can be fixed at the drill. "This world, however," says Dr. Mavrogordato, "usually becomes difficult at the stage of turning ideas into action." Dr. Mavrogordato has been greatly impressed with the steps taken to fight miners' phthisis. "There is," he says, "the application of wet-process work upon an unheard of scale, with special machines and a system of watching and controlling the dust. Although there is, as yet, no satisfactory way of estimating dust, nevertheless in the Kotze Konimeter the Rand has produced the most informing method yet devised. On the humanitarian side the Miners' Phthisis Act has carried compensation to a point that looks like sacrificing the whole of the sick, while the Miners' Phthisis Medical Bureau must be about the most elaborate organisation in the world for watching over the health of workers. Then if we consider the steady improvement in the health of the natives, the Rand compares pretty favourably with, shall I say, the cocoa industry."

A Question of Dumping.

In moving a new dumping clause addition to the Customs Act in the Assembly this week, Mr. Burton had an interesting tale to unfold about an endeavour to kill a South African industry. The industry is the South African Rubber Manufactory, which manufactures mining hose and mechanical rubber goods and supplies the mining companies and the Railway Administration. That industry had no protection from the Customs tariff. For half-inch armoured hose American suppliers charged 62s. 6d. for 50 feet, the South African price being 55s. Since that was quoted, the American price had been reduced to 45s. It appears that the American Customs declaration price was actually much below the wholesale price. The Americans were dumping with the object of killing a South African manufacture and retaining the market for themselves. They were unable to apply the dumping clause, because the representatives did not purchase outright, but were only receiving agents. In the course of the debate that followed, Mr. Fichardt considered they were practically giving a monopoly at the price which the South African manufacturers might like to charge. The matter should be decided on a percentage basis. Mr. Macintosh considered there was too much power being taken, as the resolution could be applied to any industry. Mr. Merriman pointed out that there was danger of retaliation by America; a view shared by Mr. Henderson, who thought the matter might well be left to look after itself. Whilst agreeing to the necessity for protecting certain industries in certain conditions, Mr. Sampson objected to this piecemeal legislation, and considered the clause left the road open to differentiation. Mr. Graumann wanted to know if the price difference was due to the American wish to knock out the South African industry, or to the fact that the price in America had been reduced in the ordinary way. No one was more anxious than he was, said Mr. Burton, in reply, to see that in any protection given the vast consuming public would not be injured. The Government's policy of granting relief to any industry on its merits was the best one to pursue. The principle of the resolution was exactly the same as in the dumping Act. He considered they were not attacking America, but American manufacturers were attacking South Africa. The resolution was duly agreed to in Committee of Ways and Means.

Notes & News.

Important Sabie Flotation.

The recent improvement in Glynn's Lydenburg position has directed attention to the Sabie district, and an important flotation of claims adjoining Glynns is pending. Very encouraging reports from the engineers sent to examine the property have been received, and details of the flotation will shortly be made public.

* * *

Improving Diamond Demand.

According to the Brussels correspondent of the *African World*, the Antwerp *Neptune* says the number of diamond-cutters out of work continues to decrease both at Antwerp and at Amsterdam, and optimism continues to prevail on the diamond market there as well as in England and the U.S.A., which is good news for all concerned.

* * *

A New Copper Mine.

The Oceana Company announces important copper discoveries in Artonvilla, where three copper ore bodies have been found to a depth of 200 ft. For the purpose of opening up the prospect a company has been formed in conjunction with the Anglo-French Exploration, with a capital of £50,000, of which £15,000 goes to the Oceana Co. for work already done. £15,000 is the purchase price, and £20,000 in cash for working capital is being provided by the two companies named.

Reported Gold Discoveries.

Great interest has been raised in the Union by the reported discovery of a rich gold reef some 80 miles from Keetmanshoop, South-West Africa, and of a rich strike in the Lake Chrissie district, the latter of which is alleged to be an extension of the Witwatersrand reefs. Further particulars are awaited with interest. Mr. George Kingswell, according to the *Star* correspondent, is now visiting the Keetmanshoop district at request of Sir Abe Bailey, and we shall soon therefore have the facts about the discovery in plain and probably forcible terms.

* * *

A Small Man's Mining Trust.

A movement is on foot in which Rand and Durban people are interested to form a Small Man's Trust to purchase Rand gold mining shares on a basis of intrinsic values only, *i.e.*, by taking those that yield the highest rate of interest on the capital invested. Sponsored by reliable and experienced valuators and brokers, we see no reason why the enterprise should not meet with success by putting the small man in a position to benefit from the best technical advice, now available only to the big firms and financial houses.

* * *

The Cornelia Colliery Ballot.

In a statement presented to the Mining Board representing the views of 14 out of 15 men employed at the Cornelia Colliery, it was admitted that they had balloted under a misapprehension. They said they misunderstood the position when the vote was taken recently, and their desire was to continue under Mr. Hodges's scheme (on the £40 a month basis), instead of payment per shift. Incidentally, it may be noted that a reduction of 2s. per shift of day's pay employees receiving 24s. per shift is announced to take place on the coal mines on August 1.

* * *

African Oils.

The following cable has been despatched to the chairman of the African Oils, London: " Result borehole No. 7 at 70 feet, 26½ gallons short tons; same width No. 6. Area accepted by Van Tifu and Mills Davis since confirmed by evidence. Boreholes No. 6 and 7 contain according Davis careful estimate—5,737,600 tons top shale, 1,564,800 tons bottom, or total of workable and highly profitable shale—7,302,400 short tons. No. 8 borehole. New ground on Hazemeer" halfway—Leskop boundary—encountered shale at 120 feet—possibly fairly considerable additional tonnage may be found here now opening up, have stopped further boring."

* * *

The Science Congress.

As already announced, at the invitation of His Excellency the High Commissioner of Mozambique, the 20th annual session of the South African Association for the Advancement of Science will be held at Lourenco Marques during the week commencing Monday, July 10, under the presidency of Dr. A. W. Rogers, M.A., Sc.D., F.R.S., F.G.S., Director of the Union Geological Survey. The following sectional presidents have been elected: Section A (astronomy, meteorology, engineering, etc.), Senator the Hon. Dr. A. W. Roberts, D.Sc., F.R.S.E., F.R.A.S.; Section B (chemistry, geology, geography, etc.), Dr. E. T. Mellor, D.Sc., M.L.M.M., F.G.S.; section C (botany, bacteriology, agriculture, etc.), Professor D. Thoday, M.A.; section D (zoology, physiology, etc.), Dr. Annie Porter, D.Sc., F.L.S.; section E (anthropology, ethnology, philology, etc.), H. M. Taberer, B.A.; section F (education, history, mental science, etc.), Dr. J. M. Moll.

* * *

Namaqua Copper.

At the recent annual meeting of the Namaqua Copper Company it was announced that, with the full concurrence of the superintendent (Mr. J. Garland) the " Success " mine has been purchased for £4,000, and at that price constitutes what Mr. Anthony termed " a fair mining risk." The property covers some 200 acres, and already 20,000 tons of 5 per cent. ore have been opened up. The process of Minerals Separation, Ltd., will be applied to its ore, and great confidence is felt that the result will be satisfactory. Generally, in the other properties, the reserves have been increased by 7,000 tons representing 538 tons of copper. Agreement has been come to with the Cape Copper Company by which terms of shipping and transport will be much more favourable than they have been in the past. Good progress has been made with the shipment of the new machinery, the final instalment of which is expected to leave this week. The outlook for the company is better than it has been for some considerable time.

* * *

Cape Copper: An Important Strike.

Information has been received by the Cape Copper Co. to the effect that in borehole No. 8, on Carblusberg West, which is about six miles from the famous O'okiep mine, the bore has intersected 58 ft. of ore averaging about 6 per cent. copper, including 21 ft., averaging 10 per cent. Such assay values are highly encouraging; certainly nothing better has been reported since the extensive drilling campaign for which, it will be remembered, the new money was obtained, was inaugurated. Geologically speaking, there is no reason in the world why another mine of the O'okiep class should not be opened up in this highly mineralised area. The ore body in question is at the shallow depth of 239 ft., and what the company will eventually get at greater depths, of course, remains to be proved. As the workings get nearer to the source of the deposit, however, it is reasonable to look for richer stuff. In the O'okiep mine the values were as high as 20 and 25 per cent. copper, but at levels very much below the outcrop. The boring operations are, of course, being continued, and further developments are awaited with interest.

* * *

International Labour Conference.

The pamphlet on the " Third International Labour Conference," which was held in Geneva in October-November, 1921, gives a complete summary of its progress and decisions. The International Labour Conference is held at least once a year under Part XIII. of the Treaty of Versailles, and to which the 54 States, who are members of the International Labour Organisation of the League of Nations, are entitled to send four delegates—two representing the Government, one the employers and one the workers. " It was a business Conference of busy men, and it can fairly be claimed that its achievements were notable," says the writer of the pamphlet. " Here is a Parliament, chosen on a new representative system, making decisions of a kind new to legislation since they are, in intent at least, world decisions, and using new legislative methods and machinery. It has held three annual sessions, of which this, the third, has been undoubtedly the most successful in its immediate results—there is no prophesying as to the ultimate results of its decisions—the best organised, the smoothest in action." The pamphlet contains a foreword by Lord Burnham, who was president of the Conference, and is attractively produced, with a number of illustrations. It has been printed in English and French and will shortly appear in German. The price of the English edition is 6d. or 10 cents, and special terms will be given for orders of one hundred copies or more, on application to the International Labour Office, Geneva, Switzerland.

Mr. Hugh F. Marriott, Consulting Engineer to the Central Mining Corporation, who recently paid a lengthy visit to the Rand, has severed his connection with the Corporation.

* * *

Two Rand ex-mine managers passed away this week in the persons of Mr. E. E. Hardach, formerly manager of the Wit. Deep, and Mr. C. B. Saner, formerly manager of the Luipaardsvlei Estate. Mr. Saner had retired from active mining for some years, and was living at the Coast at the time of his death.

The Week in the Sharemarket.

FIRM WITH AN UPWARD TENDENCY—LONDON A STRONG BUYER—SOME PROFIT TAKING.

Latest London advices are to the effect that the market is firm with an upward tendency. Though prices were irregular on Thursday owing to profit-taking, the tone improved after the close when the London cables began to arrive. The need for an extra half hour of business now that London buying is becoming so big a factor is every day more apparent, and this reform, if accompanied by the much-needed acceleration of the cable service, would have an appreciable effect on business. The delays in the cables have been the cause of numerous complaints to the Post Office authorities, but so far without any visible improvement. The favourite gold stocks touched record prices during the week, State Mines, Gedulds and Modders being largely dealt in. All Far East Rand shares have participated in the improvement, and the volume of business is broadening daily. Gradually, too, the effect of the decreasing working costs is being appreciated in regard to the low-priced gold shares, and there has been a continual demand for the shares of mines that stand to have their lives greatly prolonged by a return to a pre-war level of costs. The statement made by the Vice-President of the Chamber of Mines at the meeting of that body this week has had an encouraging effect, and has revealed the possibilities of the low grade properties of the Rand. The campaign to reduce costs has behind it the whole weight of public opinion, because on its success depends the prolongation of the life of the Rand. The news that the mines are getting all the native labour they require is also a bull point, and the outlook has thus improved in several directions during the week. Gold remains fairly steady, and it looks as if it will not fall below its present price. It is generally believed that the industry is entering upon a period of steady improvement and the result will be shown in enhanced profits by the end of the year. London, where money is cheap, is now beginning to realise these possibilities, and we may expect the demand for our shares from that quarter to go on growing. As regards the diamond market, a steady improvement may safely be looked for, all advices agreeing that, though the growth in the demand may be slow it is sure. The corner, at any rate, seems to have been definitely turned, and the diamond mines must sooner or later come into their own.

	Fri. 23rd	Sat. 24th	Mon 26th	Tues. 27th	Wed. 28th	Thurs. 29th
Anglo-Amer. Corp.	21 0*	21 3*	21 3	21 0	21 3	21 4½
Apex Mines . . .	7 0*	7 0*	6 9*	6 9*		6 9*
Aurora Wests	4 0*	4 0*	4 6†			4 0*
Brakpan Mines . . .	48 6†	49 3	50 0†	49 3*	49 3	50 0†
British S. Africa . .	11 6			11 0*	11 6*	11 6
Bushveld Tins . . .	0 3*	0 4*	0 4*	0 4*	0 4*	0 4*
Cinderella Cons. . .	2 6*	2 6*	2 6*	2 6*	2 9	2 10½
City and Subs.	2 6†		2 2*	2 4*	2 5*	2 3*
City Deeps	45 6†	46 0*	46 9*	47 0	48 6	48 9
Con. Diamonds . .	17 0	16 10½	16 10½	16 9	16 7	16 6
Con. Invest.	25 0*	26 0*	26 0*			
Con. Langlaagtes .				13 9*		
Con. Main Reefs	9 9*	10 0	10 3	10 4*	10 3	10 4½
Con. Mines Selec. .		14 0			14 3†	
Coronation Freeholds	0 9*	0 9*	0 9*			0 9
Coronation Synd. .	4 6*		4 6*	4 6*	4 9*	4 4†
Crown Diamonds .	6 2	6 1*	6 3*	6 4½	6 3	6 2
Crown Mines . . .	38 9†	39 0†	38 9†	39 0†	37 9*	40 0*

	Fri. 23rd	Sat. 24th	Mon. 26th	Tues. 27th	Wed. 28th	Thurs. 29th
Daggafonteins . . .		2 9*	2 9	2 9	2 9	2 9*
East Rand Coals . .	1 6*	1 6*	1 6*	1 6*	1 6	1 6
East Rand Deeps . .	0 9*	0 9*	0 9		0 9	0 9*
East Rand Minings .					11 0†	10 6*
East Rand Props. .	7 6	7 3	7 6		7 6*	7 7
Eastern Golds	0 5				0 7†	0 7†
Frank Smith Dia. .	3 10*	3 9*	3 9	3 10	3 10	3 9
Geduld Props.	62 0	63 3	63 9	64 6	65 0	65 3
Geldenhuis Deeps						6 4*
Glynn's Lydenburgs	14 9*	16 0	17 0†	17 0†		17 0†
Govt. Areas	98 6*	99 6	£5	101 3	103 0	102 6
Knight Centrals . . .	3 10*	3 10*	3 10*	3 10*	3 10*	3 9*
Lace Props.	8 0	7 9*	7 9*	7 9*	8 0*	8 3*
Leeuwpoort Tins . .	5 0*	5 3	5 3*	5 3	5 3*	5 3*
Luipaardsvlei Est. .	2 6	2 6				
Lydenburg Farms. .	5 10	5 10*	5 11	5 11*	6 0	5 11*
Meyer and Charltons		75 0†				
Middelvlei Estates .	1 3*	1 10*	1 9†	1 9†	1 3*	1 3
Modder B's	33 3	33 3	34 0	34 0	34 0	33 9
Modder Deeps . . .	44 9	45 0	46 6	16 6*	48 0	47 0
Modder Easts . . .	7 10		8 2	8 0	8 4	8 0
Natal Nav. Coll	32 0†	32 0†		31 9†	32 0†	30 0*
National Banks . . .	£10½				£11	£10½
New Eland Dia. . .		32 6*	32 6	31 0*	31 0*	31 0*
New Era Cons. . .	6 3†	6 1½	6 1½	6 0*	6 0*	6 0*
New Geduld Deeps .		1 6*	1 3*	1 6*	1 6*	
New Kleins . .		5 9*	5 9*	6 3	6 0*	6 0*
New Modders. . . .	76 3	77 0	77 3*	78 3	78 6	79 9
New Primrose . . .	5 0*			5 0*	5 6†	5 6†
New Unifieds	4 9†	4 9†	4 9†	4 0*	4 9†	4 9†
New State Areas .	33 0	32 9*	32 6	33 3	33 3	31 6
Nigels	5 0*		5 0*	6 0†	5 0*	
Nourse Mines	16 1½	16 1½	16 1½	16 9	16 7½	16 6*
Pretoria Cements .	43 6*	43 6	43 9	43 6	43 9*	44 0
Rand Collieries . .						0 9*
Rand Nucleus . . .	1 1*	1 1*	1 1*	1 1*	1 1*	1 1*
Robinson Deeps "A"	12 6	12 6	13 6	13 6	13 9	13 9
Rand. Centrals . . .	10 3*	10 3	10 4*	10 3*	11 3	11 9*
Rand Estates . . .	17 10½	18 0	18 0	17 10½	18 3	18 9
Rouxville Diamonds	1 7	1 6*	1 6	1 5*	1 5*	1 5
Roberts Victors . . .	9 0	8 9	8 9	8 9*		8 6*
Rooibergs . .	3 0*	3 0	3 0	3 0*	3 0*	
Ryan Nigels	3 0*	3 0*	4 0†		3 1*	3 0*
Simmer and Jacks .	3 5	3 4	3 4	3 4*	3 4	3 4
S.A. Lands	4 3*	4 3*	4 0		4 6†	4 3
Springs Mines	44 0	44 3	44 6	45 6	45 6	46 0
Sub-Nigels	12 0*	12 3*	12 3	12 3	12 7½	13 0
Swaziland Tins . . .		5 0*	5 0*	5 0		5 0
S.A. Alkali	16 0*	16 6*	16 9*	16 8	16 6*	17 3
S.A. Townships . . .	9 3*	9 6	9 1½	9 3*	9 6	9 3*
Transvaal Lands . .				18 0†		
Trans. G.M. Estates	11 3*		11 6*	12 6†	11 6*	11 6
Transvaal Silvers . .	14 6†		13 6*	14 0†	13 6*	13 3
Tudors . .			0 8†	0 8†	0 8†	0 8†
Van Dyk	1 0†	0 9	1 0†	0 9*	0 10	0 11*
Van Ryn Deeps	70 0†	70 0*	71 0	71 6	72 0	73 3
Village Deeps		10 9*		10 6*	11 0	10 9*
West Springs	10 3	10 4	10 7½	10 7½	10 10½	11 1½
West Rand Cons. .	4 6*	4 9*	5 0†	4 7	4 6	4 6*
West. Rand Estates	3 9*	3 9*	3 10*	3 11*	3 10	3 9*
Witbank Colls. . . .	39 6		40 0†	40 0†	40 0†	40 0†
Witwatersrands . . .	13 0*	15 0†	13 0*	13 0*	13 0*	14 6†
Wit. Deeps	10 6	10 0*	10 3	10 3*	10 3*	10 3*
Zaaiplaats Tins . . .	2 1*	2 2*	3 2*	2 3*	2 0*	2 0*
Union 5 per cent. .	£102*	£101½*	£101½*	£102	£101½	£101½*

* Buyers. † Sellers. a. Odd lots. b. Ex London.

Mining Syndicates and Small Mines can Reduce
their Working Costs by installing
"A LANE SLOW SPEED CHILIAN MILL."
For particulars apply :
J. P. ENGEL, P.O. BOX 2582, JOHANNESBURG.
'PHONE 1621'

To Lower your Operating Costs:

A Lubrication Audit

Business to-day protects itself against waste and inefficient methods——by audit.

An audit gives an exact picture of present conditions, and points the way to improvement.

We would like to call to your attention the possibilities of a Lubrication Audit in your plant.

See details in column.

Only a Lubrication Audit can give you full information, and open the way to new economies which will soon be reflected in lower operating costs.

Present industrial conditions make it urgent that you take this step toward improved results at once. Ask our nearest branch to-day about the Lubrication Audit.

GARGOYLE

Lubricants

A grade for each type of service

THE LUBRICATION AUDIT

Explained Step by Step (in condensed outline)

INSPECTION: A thoroughly experienced Vacum Oil Company of S. A. Limited, representative in co-operation with your plant engineer or superintendent makes a careful survey and record of your mechanical equipment and operating conditions.

RECOMMENDATIONS: We later specify in a written report, the correct oil and the correct application of the oil for the efficient and economical operation of each engine and machine. This report is based on :—

(1). The inspection of the machines in your plant.
(2). Your operating conditions.
(3). Our 25 years of lubricating experience witn all types of mechanical equipment under all kinds of operating conditions.
(4). The outstanding experience of the Vacuum Oil Company in manufacturing oils for every lubricating need.

CHECKING:—If, following our recommendations in this audit, you instal our oils, periodical calls will be made to check up the continuance of the desired results.
For the above Free Service address our nearest branch office.

BRANCH OFFICES:

Cape Town
Kimberley
Port Elizabeth
Johannesburg
Bloemfontein
East London
Lourenco Marques.
Pretoria
Mossel Bay
Durban

VACUUM OIL COMPANY OF SOUTH AFRICA, LTD.

THE BALDWIN LOCOMOTIVE WORKS

(OF PHILADELPHIA, PENNSYLVANIA, U.S.A.)

BUILDERS OF LOCOMOTIVES SINCE 1831.

ANNUAL CAPACITY .. 3,500 LOCOMOTIVES.

Locomotives, Steam, Electric, Petrol (or other spirit) Fireless.
Locomotive Parts.
Railway and Ore Trucks of all types and sizes.
Cane and Industrial Cars and Tramway Equipment.

Wheels. Axles. Tyres.
Ladd Water Tube Boilers (to burn coal or bagasse).
Wilson Plastic-Arc Electric Welders.
Elwell-Parker Storage Battery Trucks.
Fitler Rope for Drilling and General Purposes.

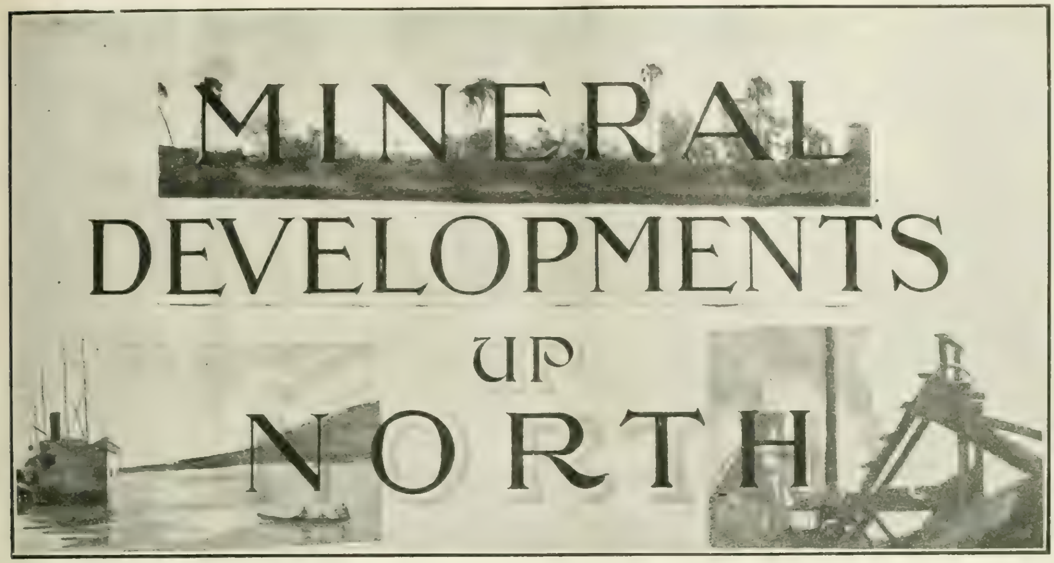
WORKS AT

PHILADELPHIA AND EDDYSTONE, PENNSYLVANIA.

INDIVIDUAL SERVICE - WORLD WIDE

Loveday House, (Loveday and Marshall Streets), **JOHANNESBURG**

P.O. Box 7017. Cable and Telegraphic Address: "BALDLOCO." Telephone 1816.



MINERAL DEVELOPMENTS UP NORTH

Congo Divide Mines.

GOLD, COPPER AND OTHER MINERALS.

From the report submitted to the annual meeting of the Tanganyika Concessions, Ltd., it would appear that the mineral field which is being explored by the Nile-Congo Divide Syndicate is something of an El Dorado. Alluvial gold up to £2 value per cubic yard, reef gold up to 10¾ dwt. per ton, and ore carrying 40 per cent. copper have been found, and also asbestos and molybdenite and traces of tin. The report stated:—

"The prior rights, which expired at the end of 1921, have been extended for a further 12 months. An alluvial gold area has been discovered of over 150 miles in length and about 50 to 60 miles in width, in which all the main rivers and many of the tributaries contain gold. The values obtained by panning are quoted as reaching in some places as high as £2 per cubic yard. In searching for the source of the alluvial gold an important gold-bearing ,copper deposit was discovered in which an area of about 1,000 yards by 200 yards is covered by native workings. The geologist reports that the ore deposit is a lode malachite replacement in porphyry having vertical veins with quartzose gangue, and the geological nature of the formation leads to the conclusion that the ore probably extends in depth and that the primary ore is a sulphide. Gold occurs in the copper ore and in quartz veins throughout the mine. The workings are in places over 30 feet deep and the lodes up to 20 feet in width; assays of samples taken from the mine give varying values up to over 42 per cent. of copper and up to 10¾ dwts. of gold, and the general indications are very promising. Investigations along the same strike have resulted in further discoveries of copper and reef gold over a length of 40 miles, and it appears probable that there is a considerable extension of the outcrops in which these deposits occur. In the south-east end of the concession reef gold has also been discovered in an occurrence which has been traced for three miles in length and in which very good showings of gold are obtained. In addition, discoveries of asbestos and molybdenite deposits have also been made and traces of tin are reported from several districts."

Mr. Robert Williams, who presided at the meeting, said the operations of the syndicate were most promising. While the prospects indicated in the report were good in themselves, he personally attached value to them mainly as an indicator, and cabled out to trace the gold to its source, with the result that gold and copper had been already traced over about 40 miles of rocks, together with a very extensive old working extending over 1,000 yards long and 200 yards in width. These workings were described as a true fissure, and assays made of loose samples all over these workings give results up to 40 per cent. in copper and 10¾ dwt. in gold. "Although I am quite sure we can develop a mine from these workings, I think it is too soon to prophesy what its value will be until further work is done, and we have sent up a competent engineer to lay out the work. I look upon the discovery of gold over so great an area in the rivers, and the finding of gold and malachite in combination over 40 miles of a belt, together with these big old workings, as an altogether brilliant prospect. I have just received the following cable from Major Christy: 'Mr. A. P. Thomson reports pyrites 64 feet depth; no water. Mr. Chennells (one of the prospectors) has made further good gold discovery.' The first part of the cable bears out the report of the geologist, who said it would go into pyrites and was a true fissure vein."

* * *

NEW GENERAL MANAGER OF B.S.A. COMPANY.

The board of directors of the British South Africa Company have decided that it has become necessary to consolidate the supervision of their numerous commercial interests in South Africa under one responsible head permanently resident in Rhodesia, and at the instance of his colleagues, Major Percy S. Inskipp, O.B.E., has consented to exchange his seat on the board for the position of general manager of the company in South Africa. Major Inskipp has a long and notable record in the service of the British South Africa Company, dating from the original Pioneer Expedition to Mashonaland in 1890, of which he was a member. For some years prior to the European War he was the company's commercial representative in Rhodesia, but relinquished the post to proceed on active service. On the termination of the war he was elected a director and a member of the Executive Committee. His future headquarters will be at Salisbury. Consequent upon the appointment of Major P. S. Inskipp as general manager of the British South Africa Company, Mr. W. Olive, who has held the appointment of Commercial Representative for the past eight years, will retire from the company's services on pension at the end of the current year.

SWAZILAND TIN.

The following are the results of the operations of the Swaziland Tin, Ltd., for the month of May, 1922: Concentrate recovered, 23 tons; estimated net profit for the month less adjustments in respect of previous shipments (taking tin at £150 per ton), £210.

The Union-Mozambique Negotiations Fails.

WHAT THE UNION GOVERNMENT WANTS—A BOARD ON SUEZ CANAL COMMISSION LINES!—COAL TRADE PROSPECTS—MINES MAY MAKE THEIR OWN RECRUITING ARRANGEMENTS—THREE MAIN QUESTIONS—STATEMENT BY THE PRIME MINISTER.

In the House of Assembly last week an important statement was made by the Prime Minister in regard to the temporary suspension of negotiations between the Union and the Portuguese Government concerning the question of a new Mozambique Convention. General Smuts at the outset said: "I wish to inform the House that the negotiations for a new Mozambique Convention, which have been going on for some time, have not resulted in any agreement being reached between the representatives of the Union and Portuguese Governments. General Freire d'Andrade, who is at the head of the Portuguese Delegation, is returning to Lisbon to lay the position as disclosed in the negotiations before his Government, and there is a possibility that negotiations may again be resumed before the present Convention lapses on March 31, 1923. The Government will, in the meantime, consider the policy which they deem necessary in the interests of the Union in case no new Convention is concluded before that date, and will lay their proposals before Parliament at its next session."

Scope of the Negotiations.

General Smuts said that at present the Mozambique Convention dealt with three large topics. The first was the railway agreement, by which traffic between Lourenco Marques and the Transvaal was regulated. As the House was aware, that agreement was concluded before Union between the Transvaal Government and the Mozambique Government. The second subject of the Convention was the recruiting of native labour in Mozambique for the gold mines on the Rand, and the third subject was the equal and unhampered exchange of products between the two countries. The present negotiations had been confined almost entirely to the first of the three subjects, viz., the conclusion of a new railway agreement between Delagoa Bay and the Union. On the matter which was the cardinal point in the whole negotiations, it was not possible to come to an agreement, continued General Smuts. The House would be aware that one of the provisions of the last Convention was that there should be a Joint Railway Council on which both Governments should be equally represented. That Council had proved unworkable—really inoperative—and the Union Government had been making a serious attempt to make a reality of that Council in the new Convention.

Transvaal Coal Trade.

The Premier spoke of the developments which were taking place in the coal industry in the Eastern Transvaal, and remarked that they expected a further great development in the future. He proceeded: "Last year we exported via Delagoa Bay about a million tons of coal, and the colliery owners assure us they are in a position almost immediately to treble that exportation. But the railway and the port facilities at Delagoa Bay are entirely inadequate to cope with such development. An immediate development, which means the trebling of the industry, is in sight, and beyond that the prospects are still greater.

"In recent years it has been found that the coal beds in the Eastern Transvaal form among the greatest in the world and probably one of the greatest assets of this country. The Government and the country have to face the fact that as the gold industry proves more and more a wasting asset and the country still continues to some extent dependent on mining, we should replace to some extent the going back of the gold industry by the development of mining in other directions.

A Board of Control.

"It is for that reason that the Government have been anxious to see that the port facilities at Delagoa Bay are such as to cope with this development. The existing Board which was established under the present Convention has proved unable to be a real instrument for developing our transport and traffic. We have claimed that the Board should be re-formed and become an independent Board—independent of both Governments. The present Board consists practically of nominees of the Governments, and their resolutions are always subject to reference to the Governments again before they come into force.

"What we have claimed is that there shall be an autonomous Board—that the Governments shall appoint members to a Board, which should be a real Board of control and management and be responsible for its own affairs very much as the Suez Canal Commission is responsible for the running of the Suez Canal. That is what we have contended for. We have also contended that, in order to make the Board really efficient, it is necessary to give a majority to the members of the Union. The Union's interests are vastly predominant in this matter, and we have contended that, in order to make the Board really efficient, the Union Government should nominate the majority of members on this Board.

"On neither of these points—neither on the point of an autonomous Board, independent of the two Governments, nor on the point of the Union Government securing a majority of the members on this Board—have we been able to succeed. Various other methods of overcoming the difficulties which are, no doubt, very considerable, have been discussed during the negotiations. General d'Andrade is in possession of the Union Government's views, and understands now the difficulties and urgency of the whole situation. He is going back to Lisbon to-day and he will lay the whole position before his Government, and if his Government is prepared to meet our point of view it will be possible still to come to a conclusion before March 31, when the present Convention expires.

"If, however, it is found impossible to meet us, then I am afraid it will not be possible to have a Convention with Mozambique. It will then be necessary for us to regulate our Union affairs without such a Convention as that which has existed now for a long number of years.

The Alternative.

"Rather than make a Convention which once more proves ineffective and a drag upon the development of the country, we are prepared to get along without a Convention. In that case, no doubt Parliament will have to consider very carefully the interests of the Union and the

MINES DEPT. EXAMS.
CERTIFICATES AWARDED INSTITUTE.

MANAGERS' EXAMS., September, 1921, January, 1922.

We obtained 15 out of a total 22 certificates awarded in South Africa

	Metal	Coal	Totals
Ours	9	6	15
Rest of S.A.	4	3	7
		Total for S.A.	22

OVERSEERS' CERTIFICATES.

During the past ten months we have secured **ALL** the Overseers' Certificates issued in South Africa, except 3 metal and 3 coal.

TUITION (Metal or Coal) by class, correspondence or privately

Mining Institute (Prof. Yates),
St. James' Mansions, Eloff St. Johannesburg

steps that should be taken in order to secure that development which is for certain coming if we provide for it, and in that case Parliament will probably have to make provision at its next session. However, it is not necessary to do anything at this stage.

"One may say that the negotiations are in a state of suspense, that we have come to what is apparently a deadlock here in Capetown; but it is possible that after the chief Portuguese negotiator has consulted the Government, those negotiations will be resumed.

"Therefore, when Parliament meets next year, it may be possible that we shall have a different tale to tell from that which I am placing before the House to-day; but, as things are now, I have to say what is a fact, that we have not come to an agreement, that the Portuguese Government is being consulted, but that if it should be found impossible to reach an agreement, then the Union will have to consider its own interests in the matter and the resulting state of affairs will have to be considered by Parliament at its next session." In reply to a question, General Smuts added: If there is no agreement, then the Government makes no further provision for native recruiting. The native recruiting arrangements which exist under the present Convention would lapse. It will be possible for the mines, if they are so advised, to make their own arrangements with the Portuguese Government, but that will be entirely outside any legal measure which the Government of the Union take.

NEW KATANGA RAILWAY.

Just as the rich Witwatersrand goldfields attracted railways inland from all the ports of the South and South-East African coasts, the great copper and other mineral deposits of Katanga in the south-eastern portion of the Belgian Congo are influencing railway development in Central Africa

At present the rail outlet of Katanga is via Bulawayo and Capetown for passengers and via Beira for goods.

To provide a direct route from Katanga to the coast, the Benguella Railway from Lobito Bay, in Angola, was begun nearly twenty years ago, but its railhead is still only a little over 300 miles inland, and there are about 800 miles to be built to connect it with the existing railway from Capetown to Bukama, at the head of the navigation on the Lualaba, or Upper Congo. The war is primarily responsible for the delay in completing the Benguella Railway, but active efforts are being made to finance the construction of the remainder. The position is complicated by the desire of the Rhodesian and South African authorities to retain the traffic to and from Katanga which now passes over their railway systems, and General Smuts has recently intervened in regard to the application made to the Trade Facilities Committee for assistance in financing the completion of the Benguella line. Further, since the war the Belgians have shown a strong inclination to develop a national route to Katanga from the Congo mouth. This is to be achieved by the extension of the Katanga railway from its present terminus at Bukama to Ilebo at the junction of the Kasai and the Luchwani, a distance of some 620 miles. Thence the Kasai is navigable by fairly large steamers to its confluence with the Congo, and the vessels can continue downstream to Kinshasa, on Stanley Pool, whence a railway runs to the estuary port of Matadi, to which ocean steamers ascend. By this route it will be possible to reach Katanga from the Congo mouth with only two changes. Eventually it is intended to continue the railway from Ilebo to Kinshasa. Work is to be begun in October or November next on the Bukama-Ilebo section.—*The Times.*

INVESTORS' DIARY.

Forthcoming Company Meetings.

(a) Annual general meeting; (s) special or extraordinary general meeting.

Meetings will be held in Johannesburg unless otherwise stated.

June 30.—Crown Diamonds (s), 12 noon.
Sept. 21.—Transvaal Gold Mining Estates.
Sept. 29.—Simmer and Jack Prop. Mines (a), 11.30 a.m.
Nov. 17.—Sub Nigel (a), 11.30 a.m.

SUCCESSFUL
FINANCIAL PUBLICITY!

CONSULT
THE TECHNICAL PUBLICITY AGENCY.

Advertising Advisers, Contractors and Consultants.
Specialised, Concentrated, Wasteless, Advertising Service.

Complete Advertising Campaigns Planned and Handled. "Copy" Prepared. Best Media Chosen. Lowest Prices and Best Positions Secured.

Company Flotations a Speciality.
Phone 913. Box 3723.
177, STOCK EXCHANGE, JOHANNESBURG.

£1,000,000,000.

In commemoration of the production in the Union of South Africa of minerals to the aggregate value of One thousand million pounds sterling,

The South African Mining and Engineering Journal

HAVE NOW IN PREPARATION A
SPECIAL YEAR BOOK FOR 1922-23.

Which will be a complete illustrated work of reference, containing all facts and figures relating to the South African Mining Industry, its technology and trade, and including valuable maps, diagrams, mine plans and statistical annexures, compiled by experts.

In 20 parts complete in one large and handsomely produced volume.

PRICE 10/6. POSTAGE 1/6 EXTRA.

Order early from the Publishers:
S.A. MINING & ENGINEERING JOURNAL,
176-180, Stock Exchange Building,
Telephone 913. P.O. Box 963.
JOHANNESBURG.

WAKEFIELD'S
HIGH-CLASS LUBRICANTS.

The Economy of Paying a Higher Price.

Were we to assert that we could get a good satisfactory engineering job at a low price or that a cheap machine is as good and will do equally good work and be as economical as a first class one.
What would you say or think?

Why not be your own Judge?

Put WAKEFIELD'S LUBRICATING OIL to the test. If a gallon goes further, gives better working results and reduces danger of breakdown, your very pride in your work will decide the matter apart from all selling talk.

TRUE CHEAPNESS IS DECIDED BY THE AMOUNT AND QUALITY OF THE WORK DONE.

Sole Agent for South Africa: WILLIAM CAMPBELL P.O. Box 1814, JOHANNESBURG

Sales Representatives:
MARTYN & BELL,

2, Allkin House,
corner Marshall and Harrison Sts.,
Box 3181 JOHANNESBURG. 'Phone 1913

343 West Street,
DURBAN.
'Phone 1368 P.O. Box 206

STANDARD BANK
OF SOUTH AFRICA,
LIMITED.
(With which is incorporated the African Banking Corporation, Ltd.)

Established 1862.

Authorised Capital - - - £10,000,000
Subscribed Capital - - - - £8,916,660
Paid-up Capital - - - - - £2,229,165
Reserve Fund - - - - - £2,893,335

GENERAL BANKING BUSINESS transacted at all Branches and Agencies; DEPOSIT and CURRENT ACCOUNTS opened; PURCHASE and SALE of INVESTMENT SECURITIES effected, etc.

SAVINGS BANK ACCOUNTS opened on terms, particulars of which may be obtained on application.

The BANK is in close touch with TRADE and INDUSTRIAL CONDITIONS, both local and overseas, and special attention is given to COMMERCIAL ENQUIRIES from customers.

EXECUTOR and TRUSTEE business undertaken.

Over 380 Branches and Agencies in Africa.

Agents and Correspondents throughout the World.

USE
"PORPOISE"
BRAND
ANTIFRICTION GREASE

Used for years by the majority of Mines all over South Africa.

Manufactured by
South African Lubricants & Chemical Works, Ltd.,
DURBAN & JOHANNESBURG.
Phone 1618, Johannesburg Branch Office.

TRADE AND INDUSTRIES SECTION.

Week in the Mining Material and Engineering Trades.

BUSINESS PROSPECTS CHEERFUL—IRON AND STEEL—TIMBER AND BUILDING MATERIALS—AMERICAN NOTES—AUSTRALIAN GOLD MINING REDUCTIONS—BRITISH AND UNION TRADE RETURNS—MOZAMBIQUE CONVENTION—FINANCIAL—GOLD DISCOVERIES.

General.

Most people will be pleased to see the end of June, said a responsible commercial man this week, with the close of financial operations for the year in respect of the majority of commercial businesses. July begins another period of activity, and the consensus of opinion among commercialists undoubtedly is that the coming financial year will prove much more satisfactory in all respects than the one we have just left behnd us. My commercial man said that the whole community could only look with satisfaction upon the completion of an unsatisfactory 12 months' trading, which, considering the trials and tribulations the gold mining industry and the Rand generally had undergone, might easily have been considerably worse, and with justifiable hopes to future prospects. He emphasised the opinion—which is generally felt in commercial circles—that Johannesburg had experienced a very trying time during the past year—the worst indeed that the community had ever gone through. Merchants had, of course, to write off very considerable sums for depreciation on goods and to struggle against an inertia in business unprecedented in South Africa or at any rate in Johannesburg commercial history. All this had been accentuated by the labour upheaval and chaotic condition of things prevailing during the first months of this year, the aftermath of which we had been living through since and would have to endure probably for some considerable time. But, although still walking in the valley of desolation, signs were not wanting that we had weathered the worst of the storm and that the community was now on the eve of better times. The industrial heads, he said, were undoubtedly making progress in the way of obtaining reduced working costs, which was the crux of the whole matter. Sir Evelyn Wallers' statement in this respect at this week's meeting of the Chamber of Mines is very reassuring and gives hope for big achievement in reduced working costs and therefore of greater exploitation of lower grade propositions in the near future. This is a very big factor, the significance of which is generally felt and the results of which are very hopefully looked forward to. There is no gainsaying that despite the present paucity of actual business a much better feeling is current as to future business. The banks and other financial institutions, it is understood, are now much more inclined to foster genuine industrial concerns than they have been in a position to do for many months. Altogether we start upon our new financial year under more auspicious conditions than we have seen for a very long time. Prices remain much about the same, if anything in some lines the tendency is still downwards. This applies more especially to iron and steel; timber is, although unaltered, very firm from the Baltic, and local prices are bound to see an advance in time on depletion of stocks. A leading merchant said that generally we were approaching gradually pre-war prices, and that, including increased rail rates, we were on an average not many miles away from normal. An influential merchant, interviewed this week, said the incline was undoubtedly towards better times; he thought September-December would see us about normal. He said the Chamber of Mines hoped to employ all possible white labour about October, which, together with the proposed railway extensions, might absorb within measurable time all unemployed in the Union. He thinks that with the Chamber of Mines' propaganda and the farmers' bigger outlook as to crops, the outlook as to the future—perhaps the near future—is very good.

Iron and Steel.

This being the time when the mines periodically indent for their next month's supplies, notwithstanding its synchronisation with their financial year's close, there has been the usual spurt in the way of July demands, and the Commercial Exchange has been fairly active during the past week, but, under the circumstances, there has been no very big buying. During the past few days there have been signs of shortages in certain sizes of steel plates, which have accordingly enhanced in value.

Latest quotations.—Dunswart iron, 18s. to 22s. per 100 lb. basis price: Union Steel Corporation, Ltd., 19s. to 22s. 6d.; imported iron and steel, flats, rounds and squares, from 25s. 6d. to 35s.: channels and joists, 25s. to 28s.; imported angles, 25s. to 28s.: smaller sizes, 2s. 6d. to 31s. 6d.; tee iron, 32s.; shafting, ⅜ in. down to 3-16 in., 7½d. to 9d. lb.; ⅝ to 1½ in., 6½d.; 1¾ in. to 6 in., 4¾d.; steel plates, 1-16, ⅛, 3-16, 21s. 6d. to 23s. 6d.; 10 x 5 and larger, 25s.; ¼ to ¾, 21s.; spring steel, 7½d. to 8½d. lb.; bolts and nuts, hexagon, round, ⅜, 8½d. to 9¼d. lb.; ½ in., ⅝ and ¾, 40s. to 45s. per 100 lb.; hexagon nuts, ⅜, 8½d.; ½ in., ⅝ and ¾, 7½d.; fish plates, bolts and nuts, ⅜ in., 8d. lb.; ½ in., 6d.; ⅝ in., 5½d.; ¾ in., 5d.; dog spikes, 35s. per 100 lb.; rivets, ¼ in., 11d.; ⅜ in., 9d.; ½ in. and ⅝ in., 37s. 6d. to 40s. per 100 lb., ⅝ in. 50s.; brass rods, ¼ in. 1s. 5d.; ⅜ in. 1s. 3d.; ½ in. 1s. 2d.; ⅝ in. upwards, 1s. 1d. per lb.; hexagon brass rods, 1d. lb. extra; copper rods, ⅜ in., 2s.; ½ in., 1s. 11d.; ⅝ and upwards, 1s. 9d. lb.; tool steel, 2s. 11d. to 3s. 3d.; brass sheets, 1s. 10d. to 2s. lb.; copper sheets, ¼ in. to 18 gauge, 1s 10d. lb.; 20 gauge, 1s. 11d.; 22 gauge to 28 gauge, 2s. lb.; firebox copper, 2s. lb.; copper tubes, ¼ in., 3s. 3d.; ⅜ to ⅝ in., 2s. 6d.; ¾ to 4½ in., from 2s. to 2s. 4d. lb.; phosphor tin, 2s. 11d.; ingot tin (Lamb & Flag), 2s. lb.; ingot lead £28 per ton; drill steel, 5½d.; hollow, 7d. to 8d.; 1¼ in. 6½d. to 8d.; wire nails, 30s. to 35s.; shovels, 30s. to 40s. doz.; wheelbarrows, 35s. to 45s.; picks, 37s. 6d. to 50s.; pick handles, 19s. 6d.; hammer handles, 14 in., 7s.; 18 in., 7s. 6d. to 8s.; 24 in., 10s. to 11s.; 30 in., 17s. 6d.; 36 in., 30s.; piping, ¾in., black, 4¾d.; 1 in., 5¾d.; 2 in., 1s. 1d.; galvanised, ¾ in., 5d.; 1 in., 7¾d.; 2 in., 1s. 7d.; ¾ in. steam 5¾d.; 1 in., 8d.; 2 in., 1s. 6d.; C. steel coke tin plates, London, 1 C., 14 x 20. 180 lbs., coke quality, 19s. 6d., f.o.b. Swansea; 1 C., 28 x 20, 216 lbs., coke quality, £1 18s. 9d.; linseed oil, 7s. 6d. per Imp. gallon. Turps have advanced 26s. a case, c.i.f., and in three weeks have made a jump of 6s., 10s., and 13s., in America. White lead, 71s. per 100 lb.; barbed wire, "Shorthorn," 69 lb.; 13⅜ gauge, 19s. 6d. to 21s. per coil; plain galvanised fencing wires, No. 8 gauge, 100 lb. coils, 21s. 6d. per coil; No. 10 gauge, 100 lb. coils, 24s. 6d. per coil; No. 12 gauge, 100 lb. coils, 26s. 6d. per coil; bulb tee fencing standards, 14 lb., 19s. 6d. per dozen; 12 lb., 23s. 6d. per dozen; black baling wire, 14 gauge, 19s. per coil, 100 lb.; 12 gauge barbed wire, 22s. per coil, 96 lb.; plain wire, No. 8 galvanised, 21s. per coil, 100 lb.; fencing standards, 21s. for 12's and 24s. for 11's; droppers, 40s. per 100; screening, 3s. to 9s. 6d. per square yard; cyanide, 1s. 7½d.; zinc shavings, 1s. per lb.

Union Steel Corporation (S.A.), Ltd.

It will be of interest to note that this Corporation reports having started the production of Ferro-Manganese and Ferro-Chrome from South African ores, which previously had been imported.

Engineering Shops.

Business seems to be brightening up a bit generally, and it is expected that the turn of the month will see increased activity.

Timber and Building Materials.

June month is generally a quiet one, and business has not been very active during the past fortnight. The Baltic market is very firm with an upward tendency, and local prices, said a leading timber merchant, are bound to rule higher when present local stocks are depleted and new indents are drawn for. At the moment prices are firm with, however, no radical alterations. Negotiations are now proceeding regarding a further reduction of wages and alteration of working rules hours. The present rate of 3s. 6d. per hour was made, it will be remembered, from 3s. 10d. on April 1st last.

Timber prices.—3 x 9 deals, up to 18 teens 1s., over 18 teens, 1s. 1d.; scantlings, 10½d.; beaver boards, 4¼d. to 4½d.; floorings, 6d. to 6¼d.; ceilings, 4¼d. to 4½d.; Oregon, 5s. 6d. a cube; pitch pine, 7s. 6d. to 8s.; corrugated iron, 7⅞d. to 8⅞d. Furniture timber: Burmah teak, 17s. 6d. per cube here for first quality, 14s. 6d. for second at the coast; American oak, 1 in., 10½d.; 1¼ in., 11d.; 2 in., 11½d. at coast; and Japanese oak, 1 in., 1s. 1d.; 1½ in., 2 in., 1s. 2d., at coast; West African mahogany, 1 in. to 4 in. thick, 26s. 9d. to 27s. 6d. per cube, at coast; Rhodesian mahogany, 9s. per cubic foot at mills; Honduras mahogany, 30s. per cubic foot; American yellow pine, 1s. 4d. per foot of 1 x 12 here; American pine shelving, 10d. per ft.; 3-ply wood, 3 m.m. up to 5 m.m., alder and birch, 4d. to 6½d. per sq. ft.; oak and teak, 3-ply, 10d. per sq. ft. Prices for bricks remain much about the same. Klompje bricks, 25s. per 100 at works; fire-bricks, £10 per 1,000 at works; mixed, 70s.; wire-cuts, £4 10s. to £5; and £5 for pressed per 1,000, at kilns; columns from 20s. to 30s., according to size; roofing tiles, Marseilles, £25 per 1,000 at the works; chimney pots, 12 in., 7s. 6d.; 15 in., 9s.; 18 in., 10s. 6d.; dry red oxide, 16s. per 100 lbs.; white lime, 7s.; unslaked, 10s. 6d. per 180 lb. bag; 8 lb. bag, 1s.; blue lime, 4s. 3d.; blue plaster lime, 5s. 3d.; cement, 10s. a bag; damp course and roofing, 36s., 54s. to 55s. for 1 to 3-ply. Building operations still remain quiet, but an improvement is looked for shortly.

A big building contract, viz., that of the new Municipal Buildings and Carnegie Library at Benoni, has been secured by Messrs. Reid & Knuckey, of Johannesburg, at a total price of £30,297. This contract, it is understood, will be taken in hand at once, and should help towards relieving the congestion of unemployment.

Second-hand Iron and Timber.

Business remains sluggish, with, however, better prospects in the near future. Prices are about 6d. for iron and 8d. for timber. Stocks are not too abundant.

Electrical Goods.

In the opinion of a prominent dealer, things are gradually getting better both in town and country. There are many more inquiries now than hitherto, he said, and orders are also increasing. Prices, he thought, had a tendency to advance rather than decline. Stocks are abundant in all lines, and accretions are being made thereto every week. This dealer reported a very busy week, and indeed fortnight, and thought things in the electrical world would jump about August next.

Union's Trade Retrrns.

For the first quarter of the year the Union's imports and exports compare with the corresponding period of 1921 as follow:—

	1921	1922
Imports ...	£18,902,979	£11,320,738
Exports ...	£14,521,338	£12,182,071

The imports for March itself dropped £860,679 and the exports declined £1,842,844. The Rand upheaval was, of course, the chief cause of the decline on the quarter's results, without which the exports, swelled by the gold export, would have shown a balance on the right side. The imports show heavy declines in iron and steel, machinery, vehicles, wood and timber, etc. Motor cars have during the quarter increased in number from 74 (1921) to 323, and in value from £38,000 to £66,000.

British April Trade Returns.

These show imports at £80,661,000, or more than £7,000,000 below March figures, and exports at £64,700,000, a decline of over £10,000,000. Notwithstanding the falls indicated, in view of the shorter month and of the dislocation caused by the engineering strike, authorities are inclined to see in these figures indications of trade stability which May month may emphasise.

British Coal Trade.

Business is at the moment depressed and largely unremunerative; wages in practically every coalfield—now regulated by profits—are down to the minimum—about 20 per cent. above pre-war scale, and conditions of workers are said to have never been so bad in the history of coal mining. Domestic coal has been reduced by 9s. per ton.

American Notes.

Argentine Resumes Oil Shipments to Europe.—Buenos Aires reports that recently an export shipment of 7,687 metric tons of Argentine petroleum has been sent to Germany, the first shipment of Argentine petroleum to Europe since the war. Two German controlled companies, the Astra and Compania Kinkelin, are prominent in Argentine oil affairs.

Standard Oil Stock.—The annual report of the Standard Oil Co. of New Jersey shows that the earnings per share of common stock last year was $5·07, or 7 cents more than its common dividend requirements. The year's surplus, after expenses, depreciation and taxes are deducted, is given as $33,845,930.

Washington reports that America's foreign trade slumped in April after its recent advances. Exports for the month aggregated $321,000,000, compared with $330,000,000 in March, and imports totalled $217,000,000 against $256,000,000 the previous month. Exports during April were the lowest of any month of the current fiscal year and about $19,000,000 less than the same month a year ago, while imports for April were the lowest since February, when the total was approximately the same, and were about $37,000,000 lower than the same period last year. For ten months ended April exports aggregated $3,131,000,000, against $5,850,000,000 during the corresponding months of 1921, while imports for the period were $2,005,000,000, against $3,264,000,000 during the ten months ended April, 1921. Gold exports for April aggregated $1,579,000, compared with $384,000 during the same months last year, while imports of gold for the month aggregated $12,000,000, against $81,000,000 in April, 1921. Gold exports during the ten months ended April aggregate $22,000,000, compared with $132,000,000 during the corresponding month of 1921, while imports of gold for the period totalled $446,000,000, against $537,000,000 during the ten months ended with April last year.

More than five billion dollars has, it is said, been added to the market value of American securities during recent months. This has increased the wealth of perhaps ten million owners of bonds and stocks, has greatly fortified the financial and credit strength of industrial and transportation and mining and utility corporations, has raised the worth of the assets of insurance companies and savings banks and estates and other holders of enormous quantities of securities, and has in many other ways improved the situation. The wealth of the huge American agricultural population likewise within recent months has been increased tremendously through a 40 per cent. rise in corn, wheat, hogs and other products of the farm, thus enabling the farmers to overcome most of their financial troubles and to become potential buyers on a very much wider scale than formerly. The notable recovery in sterling, francs, and other important foreign currency has added immeasurably to the purchasing power and credit standing of these nations. The reduction in unemployment during the last two or three months has restored normal purchasing power to many thousands of families. The recovery of about 10 per cent. in the general price level from the low point recorded last year by index numbers has added several billions to the value of assets owned by business enterprises throughout the country. Some very recent price advances have greatly encouraged and strengthened several basic industries. These facts, together with the phenomenal easing of money rates, go far to explain, says a well-known American authority, why pessimism has given place to rational optimism and why business has enjoyed appreciable improvement.

Iron and Steel.

Iron and steel business is confined to prompt requirements. The pig iron outlook is favourable for foreign business. Cleveland No. 3 G.M.B. are quoted at 90s. per ton; higher prices are looked for in the near future. The prospect for iron and steel manufactures is better, owing to British prices having dropped to a reasonable level and to the fact that foreign competition is less intense. Steel is operating at about 75 per cent. to 80 per cent., and shows an advance of 7 per cent. Plates and bars, $1·60 to $1·75; black sheets, $3·15; galvanised sheets, $4·15, base Pittsburg.

Copper.

Copper metal sales for March on all accounts are placed at 185,000,000 lb., as compared with 101,000,000 lb. for the preceding month. This improvement is partly due to larger export sales made at reduced prices; but growing activity in various prominent lines of general business in America is undoubtedly beginning to have a natural and normal effect on the demand for the product. Latest quotation, 13¾ cents.

Business in the motor trade is now on a more stable footing; the manufacture of automobiles, tyres, and accessories is increasing.

The coal strike in America, which has now lasted three months, has, after a period of comparative quietness and order, now irrupted into a state of bitterness and outrage, in which many lives have been sacrificed. The authorities have now control of the situation.

Impending Railway Strike.

A strike of railwaymen is imminent in the United States, which will involve upwards of a million and a half of railwaymen, in consequence of a cut in their wages. Strike ballots are now circulating for a strike to take effect from to-day and are expected to be overwhelmingly in favour of stopping work. Latest reports from the States predict that the effect will be to prolong the coal strike, which has been in existence since April 1.

U.S. Bank Rate Reduction.

The Federal Reserve Bank, in consonance with the Bank of England, has reduced the discount rate by ½ per cent. to 4 per cent.

Australian Gold Mining Reductions.

A cable from Perth announces that the Arbitration Court has in its award reduced the wages by 1s. a shift and abolished Sunday overtime, involving continuous operations. The chief dissatisfaction with the award is heard from the mine owners, who say the position is very serious now that the price of gold is more normal.

The Rand Refinery, Sir Evelyn Wallers, stated at the Chamber of Mines meeting this week, had reached the position of being able to deal with the whole of the precious metals produced in South Africa, and it was, he said, confidently expected that a considerable saving would be made on the refining charges as compared with the past

Possible Closing Down of Rolls-Royce Works.

The Rolls Royce, Ltd., owing to the decrease in orders, are considering closing down their aero engine works in Derby. Unless the Government comes forward with orders for engines a closing down of the works is inevitable.

Cape Copper Company.

The Chancery Division has granted the application for the appointment of two receivers for the Cape Copper Co., with liberty to borrow £500 immediately to pay employees' wages and further sums if required.

Mozambique Convention.

Although the negotiations between the Union and Portuguese authorities to renew the Mozambique Convention have been suspended for the time being, it is felt in authoritative quarters that a mutually satisfactory arrangement will ultimately be arrived at. The absence of such an agreement would be equally disadvantageous to the Province of Mozambique and to the gold and coal mining industries.

Financial.

The Minister of Finance has given notice in the Canadian House of Commons of the introduction of a Bill authorising a loan of $350,000,000 to meet maturing obligations.

The Johannesburg Town Council proposes a scheme to borrow £1,000,000 for works of a capital nature.

Reduction in Tram Fares.—It is proposed to increase the discount on tram fares from 33⅓ per cent. to 50 per cent. as from October 1 next, which means practically the institution of 1d. tram stages.

The financial position, as stated by Mr. H. J. Crocker, chairman of the Finance Committee, on Tuesday last, with its important reductions in expenditure, is very satisfactory.

A £6,000,000 loan issued by the London Underground Electric Railway in 4½ per cent. debentures at 94, interest on which is guaranteed by the Government, is now being underwritten.

The Palestine Development Council in America is raising $1,500,000 towards the Rutenberg-Jordan river scheme, of which amount $600,000 have already been promised.

Indian Loans.

The Indian Government is issuing a new loan of £13,500,000 at 5½ per cent. at 96. The Government further is issuing an unlimited loan in India at 6 per cent. at par, free of Indian income tax, repayable at par between 1927 and 1932.

S.A. Reserve Bank.

The statement of the Bank on June 24 showed ratio of cash reserves with liabilities to the public at 76·4 per cent.

Empire Exhibition.

According to a message to the *Morning Post* from Sydney, Australia's representation at the Empire Exhibition is to occupy 150,000 square feet at least, at an estimated cost of £250,000. What is the Union going to do?

RHODESIAN MAY OUTPUT.

The summary of mineral production for Rhodesia in May is as follows: Gold, 53,920·41 fine ozs., value £273,562 (includes £45,318 gold premiums); silver, 15,716·85 fine ozs., value £1,775; coal (raised 37.821 tons), sales value £11,684; coal (used for coke and bricks), value £5,184; copper (blister), 288·96 tons, value £17,338; chrome ore, 5,503·38 tons, value £18,278; asbestos, 828·07 tons, value £19,012; arsenic, 59·30 tons, value £1,347; mica, 7 tons 1,899 lbs., value £1,987; diamonds, 15·75 carats, value £59; a total value of £350,226.

PROSPECTUS

OF

The Slangapies Coal & Oil Shale Exploration,

LIMITED.

(TO BE REGISTERED UNDER THE LIMITED LIABILITY LAWS OF NATAL).

NOMINAL CAPITAL - - £30,000

DIVIDED INTO **60,000** SHARES OF **10/-** EACH.

To be issued to the Vendors as fully paid - - - -	30,000 shares=£15,000
For Working Capital - - - - - - - -	30,000 shares=£15,000
	60,000 shares=£30,000

15,000 of the Working Capital Shares have been underwritten.

Directors :

C. D. KEITH FRASER, Esq., Hill Crest, Natal.
F. W. GIRDLER BROWN, Esq., M.I.M.M., Mining Engineer, Rand Club, Johannesburg.
H. McINTOSH, Esq., Merchant, Durban, Natal.
E. H. HUTT, Esq., M.E., Mining Engineer, Wakkerstroom, Transvaal.
PAUL DREYFUS, Esq., Director of Companies, Rand Club, Johannesburg.

Auditor :

T. M. WADLEY, Esq., A.S.A.A., 22, Club Arcade, Durban.

Bankers :

STANDARD BANK OF SOUTH AFRICA, LIMITED.

Solicitor :

E. H. CLEMMANS, Esq., Smith Street, Durban.

Secretary :

M. L. MacHARG, Esq., Registered Public Accountant, 13, Club Arcade, Durban.

The Slangapies Coal and Oil Shale Exploration,

LIMITED.

OBJECTS OF THE COMPANY.

To purchase from the Vendors all the options and rights over the Oil Shales and Coal in the undermentioned farms in the Wakkerstroom District, Transvaal :—

Mooibron, No. 7	800	morgen
Zuurbron, No. 30 (portion of)	1,321	,,
Zuurbron, No. 30 (portion of)	792	,,
Paardiplaats, No. 21 (portion of)	2,850	,,
Paardiplaats, No. 21 (portion of)	1,000	,,
Middelpunt, No. 33	1,404	,,
Zandkrael, No. 29 (portion of)	1,003	,,
Welgevonden, No. 323	1,282	,,
Langewacht, No. 247 (portion of)	625	,,
Goedhoep, No. 122	3,869	,,
Rooikraal, No. 126 (portion of)	1,417	,,
Donkerhoek, No. 131	812	,,

This area is approximately 40,000 acres.

Contracts between the Vendors and Owners of the above farms have been entered into, nine of which have been registered against title deeds and four are being registered.

The Slangapies Coal and Oil Shale Exploration, Ltd. (Continued).

The basis of the contract is that of a Royalty on the Coal and Oil Shale mined, with the option of purchase and such surface rights as may be required by the Company to carry out its business.

The principal objects of the Company are to thoroughly prospect and develop this large area of Coal and Oil Shale, which has already been opened up in various places.

A very considerable amount of work has been carried out by the Royal Dutch Oil Corporation on the boundaries of the properties, and the encouraging reports thereof enable the Directors to anticipate with confidence a successful career for this Company.

SITUATION.

These properties are situated about 18 miles east of Wakkerstroom near the Piet Retief Road, and form what is called the Slangapies Berg, of which the well-known MAKATEES KOP at one time formed a part; in this District South Africa's best coal is found. The same coal seam as opened up at Makatees Kop continues into the Slangapies Berg and overlying the Coal the valuable OIL SHALE seam is found.

According to the reports hereafter referred to, the Company possesses in this exceptionally large area very considerable wealth in the excellent Coal which has been proved to exist throughout the farms. The district is but little broken or disturbed and seams have been exposed varying from 3ft. 6in. to 6ft. 6in. in thickness, giving a very satisfactory Calorific value of 13·31, and a low percentage of ash.

This alone is a most valuable asset which the advent of the railway in the not far distant future would materially enhance. The immediate business of the Company, however, will be to continue the work already commenced in the district by the Royal Dutch Oil Corporation to open up and develop the OIL SHALE. The need in the near future of further large reserves of Oil is recognised by all those engaged in this business, and the growing demand for oil and the products of oil already reaching the sum of nearly £4,000,000 per annum imported into the Union of South Africa, ensures a market, apart from an export trade which will undoubtedly follow.

MARKETS FOR PRODUCE.

In the year 1920 the value of the Motor Spirit, Paraffin, Lubricating and other Mineral Oils, Paraffin Wax for making candles, and antifriction grease imported into the Union of South Africa and Rhodesia amounted to the large sum of £3,795,625, of which only 1 per cent. to 3 per cent. came from the United Kingdom, the balance being divided between the United States of America and the Dutch East Indies.

It is therefore quite evident that no difficulty should arise in finding a market at the door, as upwards of 1,000,000 tons of Oil Shale would have to be treated per annum to supply the local demands.

POLICY OF THE COMPANY.

The policy of the Company will be to prove the value of each of the farms by means of drilling, tunnelling, and where necessary, shaft sinking. On the completion of this work the whole of the ground will be sub-divided into mining areas suitable for the formation of subsidiary companies.

Mr. F. W. Girdler Brown, M.I.M.M., etc., for 20 years a well-known manager of Mines, will direct the technical work of the Company.

Active work will be commenced at once to prove what is confidently expected is a very large and valuable area of a commodity for which the world's demand is rapidly increasing, and which those who are interesting themselves in this Company should find highly remunerative.

Under the Articles of Association the Vendors' power to vote is considerably restricted.

The Directors reserve to themselves the right to pay a commission or brokerage not exceeding 5 per cent. on shares offered for subscription.

The Company will refund to the Vendors all option monies as from January 1st, 1921, the Articles of Association gives power to the Directors to issue any Shares, other than Vendors, at a premium. It is the intention of the Directors to have these shares quoted on the Stock Exchange.

INSPECTION.

A copy of the Articles of Association, Option Contracts, Vendors' Agreement and Reports can be seen at the office of the Secretary, M. L. MacHarg, 13, Club Arcade, Durban.

APPLICATIONS.

Prospectuses and forms of application can be obtained at the office of the Secretary, M. L. MacHarg, Esq., 13, Club Arcade, Durban; or from Mr. F. W. Girdler Brown, P.O. Box 3987, Johannesburg.

The date of the issue of this Prospectus is the 10th of April, 1922, and all statements herein must be construed as made at that date.

CARBIDE

——ALL SIZES——
IN 1, 5, 10, 50 lb. TINS
and 100 lb. DRUMS

Apply: MANAGER,
RAND CARBIDE, LTD.,
SOUTH GERMISTON
'Phone 252 Germiston.

Now in Preparation.

Special £1,000,000,000 Number of the "S.A. Mining and Engineering Journal" Year Book for 1922-23.

In 20 parts complete, in one large and handsomely produced volume.

PRICE 10/6. POSTAGE 1/6 EXTRA.

Order your copy now from the Publishers, 176 to 180, Stock Exchange Buildings, P.O. Box 963. Telephone 913. Johannesburg.

Manufacturers of all Classes
of STEEL WIRE ROPES,
including Flattened
Strand and Lock
Coil.

EXCELSIOR
WIRE ROPE COMPANY, Ltd., CARDIFF.

Sole Agents:
FLINT & EPTON,
HOWARD BUILDINGS,
JOHANNESBURG.

The Simmer & Jack Proprietary Mines, Limited.

(Incorporated in the Transvaal.)

NOTICE TO SHAREHOLDERS.

NOTICE IS HEREBY GIVEN that the Twenty-fourth Ordinary General Meeting of Shareholders in the above Company will be held in the Board Room, Consolidated Gold Fields Buildings, Simmonds Street, Johannesburg, on Friday, the 29th September, 1922, at 11.30 a.m., for the following purposes:—

1. To receive and consider the Reports of the Directors and Auditors, the Balance Sheet as at 30th June, 1922, and Statement of Income and Expenditure for the year ended 30th June, 1922.
2. To elect two Directors in the places of Messrs. D. Christopherson and W. A. Mackenzie, who retire by rotation, but are eligible and offer themselves for re-election.
3. To appoint Auditors for the current year, and to fix the remuneration for the past year's audit.
4. To transact such other business as may be transacted at an Ordinary General Meeting.

The Transfer Books of the Company will be closed from the 15th to 29th September, 1922, both days inclusive.

Holders of Share Warrants to Bearer intending to vote at this Meeting must comply with the regulations concerning the issue of Share Warrants.

By Order of the Board.

NEW CONSOLIDATED GOLD FIELDS, LIMITED,
Secretaries.

C. HELY HUTCHINSON,
Assistant Manager.

Head Office:
Consolidated Gold Fields Buildings,
Simmonds Street,
Johannesburg.

23rd June, 1922.

THE SUB NIGEL, LIMITED.

(Incorporated in the Transvaal.)

NOTICE TO SHAREHOLDERS.

NOTICE IS HEREBY GIVEN that the Twenty-fourth Ordinary General Meeting of Shareholders in the above Company will be held in the Board Room, Consolidated Gold Fields Buildings, Simmonds Street, Johannesburg, on Friday, the 17th November, 1922, at 11.30 o'clock in the forenoon, for the following purposes:—

1. To receive and consider the Reports of the Directors and Auditors, the Balance Sheet as at 30th June, 1922, and Statement of Income and Expenditure for the year ended 30th June, 1922.
2. To elect two Directors in the places of Messrs. W. S. Smits and J. H. L. Mañisty, who retire by rotation, but are eligible and offer themselves for re-election.
3. To appoint Auditors for the current year, and to fix the remuneration for the past year's audit.
4. To transact such other business as may be transacted at an Ordinary General Meeting.

The Transfer Books of the Company will be closed from the 3rd to 17th November, 1922, both days inclusive.

By Order of the Board.

NEW CONSOLIDATED GOLD FIELDS, LIMITED,
Secretaries.

C. HELY HUTCHINSON,
Assistant Manager.

Head Office:
Consolidated Gold Fields Buildings,
Simmonds Street,
Johannesburg,

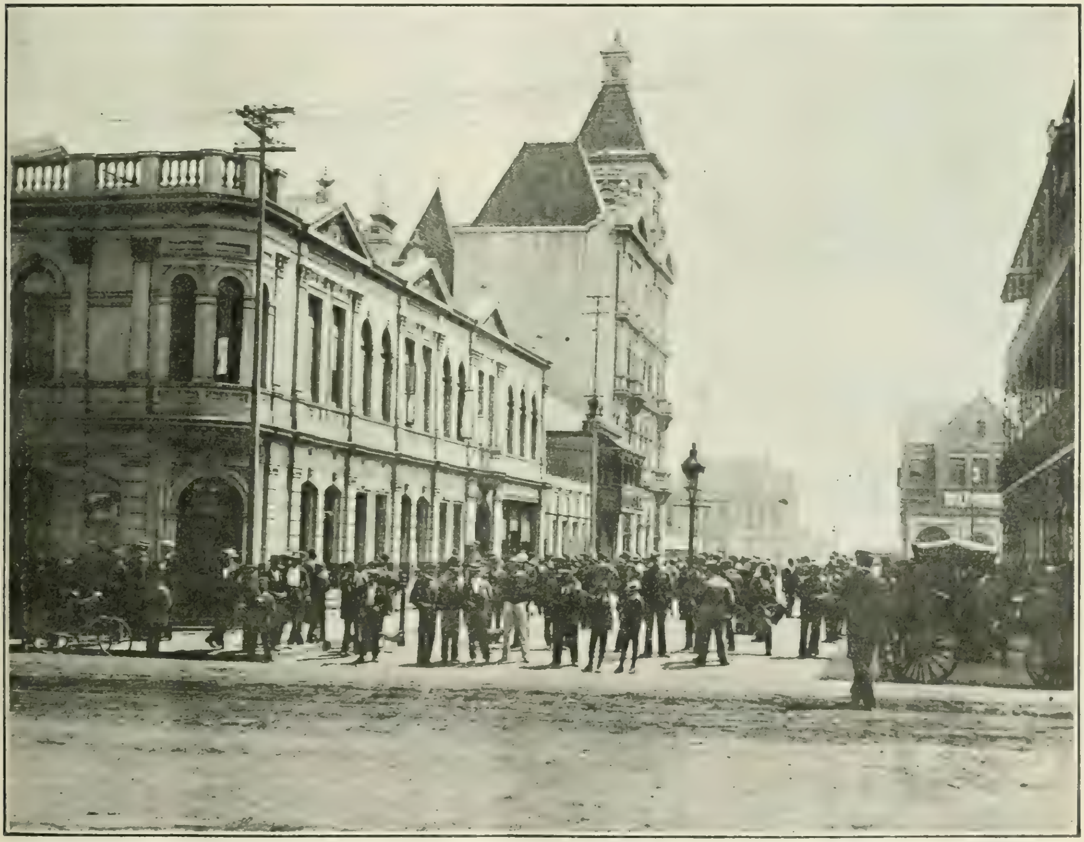
23rd June, 1922.

Modder "B" Outlook—Springs West Prospects—June Costs and Profits at a Glance—Waste and Efficiency.

The South African
Mining & Engineering Journal
THE ONLY MINING AND ENGINEERING WEEKLY PUBLISHED IN AFRICA.
Established 1891.

Vol. XXXIII, Part I. JOHANNESBURG, TRANSVAAL, SATURDAY, JULY 8, 1922. No. 1606.

A Stock Exchange "Boom" in Former Days!



" Between the Chains " 25 years ago. A scene when the market was active. On the right is the old Corner House and on the left the old Stock Exchange. Beyond at the corner is the former building of the Robinson Bank, of which so much was heard lately.

SIEMENS BROTHERS

& CO., LIMITED

MANUFACTURERS OF

CABLES

AERIAL, UNDERGROUND, SUBMARINE.
Paper Insulated. Rubber Insulated.
Gutta-Percha Insulated.
Lead Covered. Armoured.

WIRES

Rubber Covered. Gutta-Percha Covered.
Cotton Covered. Silk Covered.
Asbestos Covered. Enamelled.
Motor Car Leads.

CABLE ACCESSORIES

Joint Boxes. Connection Boxes
Service Boxes.
Insulating Compounds. Tapes.

TELEPHONES

Manual Exchanges. Automatic Exchanges.
Intercommunication Sets.
Loud-speaking Telephones. Portable Telephones.
Mining Telephones.

TELEGRAPHS

Inkers. Sounders. Relays.
Keys, &c. Station Sets.
Fast-speed Apparatus.

LINE MATERIAL

Tubular Poles. Lattice Poles.
Pole Structures.
Arms. Brackets. Insulators.

SIGNALLING APPARATUS

For RAILWAYS—
(Siemens's All-Electric Power System)
and for
SHIPS, MINES, POWER STATIONS.

PRIMARY CELLS

Fluid and Dry.

Representatives in South Africa:

A. J. G. SIMPSON, A.M.I.E.E.
African Life Buildings, 85, St. George's St.,
CAPE TOWN.
P.O. Box 239, Cape Town. Telephone 1202 Central.

G. H. B. BERNARD, A.M.I.E.E.
9-10, Cotts Buildings, Rissik and Fox Sts.,
JOHANNESBURG.
P. O. Box 7404, Johannesburg. Telephone 408 Central.

Telegrams : "SIEMENS."

The Improving Prospects of Modder B.

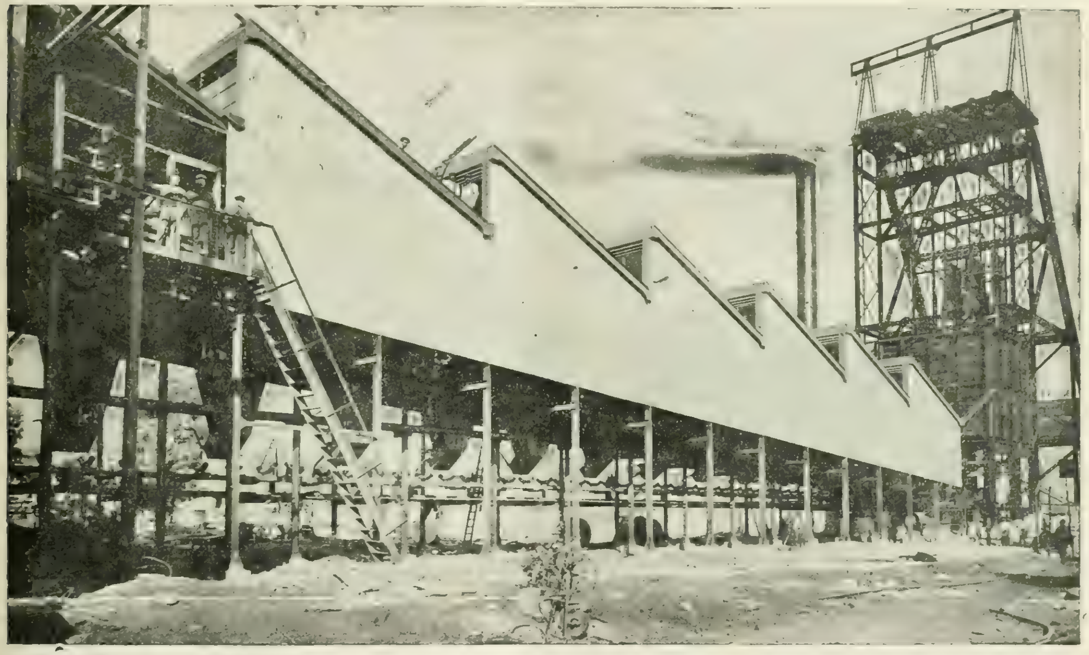
SPLENDID PROFITS—COSTS FURTHER REDUCED—STEADY PROGRESS.

The excellent returns for the Modder B. for June have drawn attention to the steady progress being made by this company. The following comparative figures show tonnages, total revenue, costs and profits, and tell their own story:—

		Revenue.	Cost.	Profit.
1921.	Tons.	£	s. d.	£
December	56,000	136,566	27 5	59,845
1922.				
March	47,000	106,988	—	*7,204
April	40,000	93,990	25 2	43,603
May	55,000	125,004	23 3	60,965
June	60,000	148,217	22/2	81,629

*Loss.

It will be remembered that Sir Evelyn Wallers, who presided at the annual meeting of the Modder "B" the other day, emphasised the heavy losses caused by the strike. April month had, however, shown "a considerable improvement." Although in common with all other mines on the Rand, the native labour supply of the mine in 1921 still remained depleted, forty thousand tons were milled at a yield of 10·3 dwt., with a reduction of working costs to 25s. 2d. per ton milled, as against 26s. for the year 1921. "From now onwards," said the chairman, "it is hoped that steady progress will be made towards efficiency, and that an appreciable reduction in working costs will be achieved during the remaining portion of this year." Development results generally are said to be improving, and the portion of the chairman's speech dealing with this subject was of special interest. As regards development and ore reserves the chairman said: "As regards the ore reserve position, you will see from the consulting engineer's report that as calculated at December 31, 1921, the tonnage was estimated to be 2,773,300, and the value 9·6 dwt. over 63 inches, as against a tonnage of 3,006,600, valued at 8·6 dwt. for the previous year.



The Modder B.: View of the Surface Plant.

The Year's Total.

"Turning now to development operations, the total development footage accomplished during the year amounted to 24,726 feet. The two new deep-level shafts reached their final depth during the year under review. At the south-eastern shaft development operations were commenced in July and the total amount of footage accomplished was 2,880 feet, of which 1,745 feet disclosed reef. The reef exposures on the 6th and 7th level drives were unpayable, but better grade ore is indicated at the present time on the 6th level west. At the Geduld raise, of which mention was made last year, a drive has been extended 320 feet in a southerly direction, the values being satisfactory and averaging 893 inch-dwt. for the full distance. The south-west shaft reached its final depth of 1,769 feet in June, and by the end of the year its final equipment both on the surface and underground was almost completed. This work has since been entirely finished. Good progress has been made with the crosscuts at the fifth, sixth, seventh and eighth levels, and in all respects, as a result of the new workings, the development of this section of the mine will be much facilitated.

South-West Secton.

"The south-west section continues to be the area where the bulk of the payable ore is contained. Although for a time the values were more erratic than during the previous year, you will be pleased to observe that during the last quarter of the year there was a steady improvement at several points. The development accomplished in the north-eastern section of the mine amounted to 5,926 feet, of which 2,950 feet disclosed reef. Of this, 44·7 per cent. was payable, averaging 412 inch-dwt., and the general condithose at this section, although much of the development work accomplished must be regarded as of a preliminary nature, are not very encouraging.

Consulting Engineer's Views.

A good deal of light was thrown upon the progress of the property by Mr. Stuart Martin, the consulting engineer, in his last annual report. He pointed out that the crushing capacity of the mine had been increased to 64,000 tons per month by the addition of a tube mill and plates. The improved yield was due chiefly to the fact that the results from stoping operations were more favourable than anticipated from the previous year's valuation of the ore reserve —the extent to which overmining took place being practically negligible. Special attention continues to be given to the rejection of valueless development rock, and a great deal of waste is kept in the mine. Development operations were increased, particularly in the second half of the year, when the south-eastern shaft came into operation, the average footage for that period being 2,390 feet per month. The estimated tonnage of payable ore developed for the year amounted to 683,840 tons of an estimated value of 9 dwt. per ton; of this 253,740 tons are situated in the eastern, 73,940 in the central, and 356,160 tons in the western area.

"The result," said Mr. Stuart Martin, "is scarcely representative of the large footage accomplished, but as much of this has been in the nature of preliminary work, more productive results should be obtained during the current year, particularly as rapid progress can also now be made from the south-western shaft. Other points gleaned from the consulting engineer's report are that during last year the south-western shaft was sunk 589 feet to its final depth of 1,769 feet, and has been connected up to that portion of the south-western area of the mine already developed. This shaft is now completely equipped to handle a considerable tonnage, and its connection to the central sorting station by a mechanically operated haulage is completed. The problem of dealing with ore from the south-western area is now much simplified, and the cost of ore transport will be cheapened; in addition, future development in the deeper portion of the mine will be greatly facilitated. The commitments on capital account for the current year are comparatively small as compared with the two past years; approximately £11,000 remaining to be expended on work yet to be completed. Apart from the fact that the price obtainable for gold is not likely to be so high as during 1921, the general outlook for the mine during the current year is in every way satisfactory.

THE INDIRECT JET DRILL FOR DEEP LEVEL BORING

In this drill the usual method, in which water pumped through a hollow drill-rod returns by the annular space between the rod and the borehole walls, is reversed. P. Stein (*De Ingenieur*) compares the efficiency of the two methods, and deduces mathematically the advantages of the indirect system. These theoretical deductions are shown to be borne out in practice. The advantages may be summed up as follows: (1) The efficiency obtained is higher, because broken material is more easily removed and the bottom of the borehole kept clear in consequence. This enhances the speed of drilling, which is further increased by the fact that the material need not be further reduced in size by the drill before it can be brought to the surface. (2) A smaller flow of water, and consequently a lower initial pressure, is required. This results in reducing steam consumption, leaks, and liability to breakdowns and renders possible boring to very low levels in places where direct jet drilling has to be abandoned owing to insufficiency of available power. (3) Large boreholes can be drilled with the same facility as holes of smaller diameter, whereas in the direct method the output diminishes as the diameter of the hole increases. (4) Drill holes of smaller diameter may be used, and the smaller weight makes it possible to use the same boring gear for drilling deeper holes than would be possible with the direct system. (5) The most important advantage from the geological and prospecting points of view is the fact that the material is brought to the surface in a fraction of the time required in the direct system. A much more accurate idea of the strata passed through is thus obtained, and it becomes possible to use the jet drill in place of the more expensive diamond core drill.

DIVIDENDS.

Bell's Transvaal, 1s. (less income tax); books closed, April 29; payment, July.

Central Mining and Investment, 6s. (tax free); books closed, June 15-21.

Gold Fields Rhodesian, 6d. (less income tax); books closed, May 16; payment, June 8.

Lonely Reef, 15 per cent. (actual); books closed, May 29—June 3; payment, July 14.

Premier (Transvaal) (pref.), 6s. 3d. (less income tax); books closed, April 29; payment, June 20.

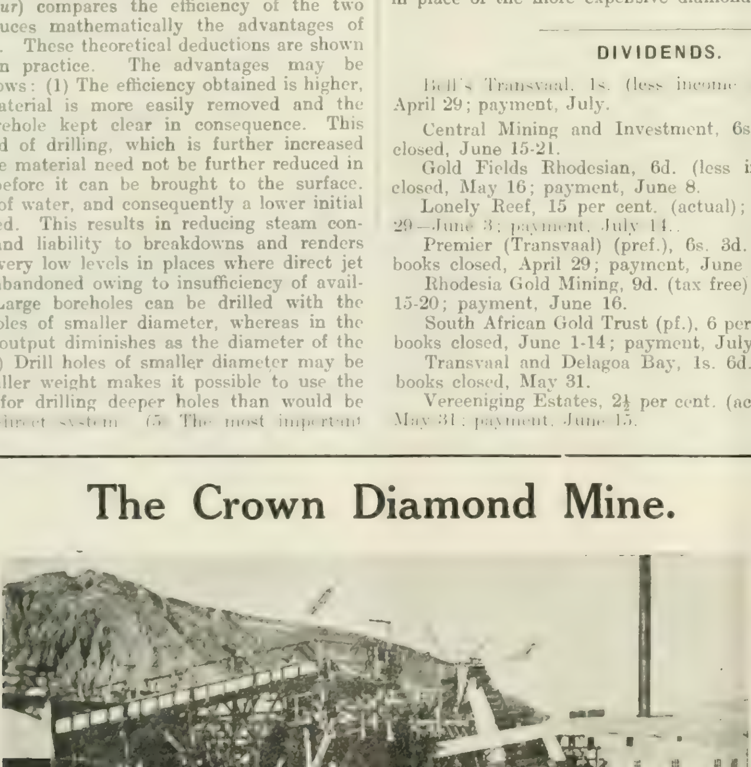
Rhodesia Gold Mining, 9d. (tax free); books closed, May 15-20; payment, June 16.

South African Gold Trust (pf.), 6 per cent. (per annum); books closed, June 1-14; payment, July 1.

Transvaal and Delagoa Bay, 1s. 6d. (less income tax); books closed, May 31.

Vereeniging Estates, 2½ per cent. (actual); books closed, May 31; payment, June 15.

The Crown Diamond Mine.



The Crown Diamond's washing plant. Details of the position of the mine and the reconstruction scheme appear elsewhere in this issue.

The Outlook for West Springs.

DEVELOPMENT IMPROVING—RECORD PROGRESS—AMPLE CASH IN HAND.

Once again the sharemarket interest in a company has called attention to its possibilities; and West Springs has been much in the limelight of late. Shareholders, actual and prospective, are continually asking for details of development, but the official statements leave nothing to be desired in this connection. For the best and most authoritative account of the position at the property one has to turn to the speech made from the chair at the recent meeting of the Anglo-American Corporation. On that occasion it was shown that the work of opening up the West Springs property has proceeded satisfactorily, and the excellent progress made in shaft sinking has been maintained in the primary development headings. In March of last year the No. 1 shaft cut the reef at a depth of 3,890 feet. After the necessary work as regards station arrangements had been completed, the east haulage was extended to a connection with the haulage driven from Springs Mines, the connection being effected early in this year. The reef at No. 2 shaft was ascertained to be considerably deeper than was hoped, and, as the east haulage from No. 1 shaft provides a second outlet *via* Springs Mines, the sinking of No. 2 shaft was suspended for the time being, the board being of opinion that the available cash resources of the company could most profitably be employed by concentrating every effort on opening up the area between No. 1 shaft and Springs Mines, the development of which is now being rapidly proceeded with.

West Springs: The latest photo.

Recent Development at West Springs.

More recent development has disclosed better results than were obtained at the initial point where the reef was cut in the No. 1 shaft. Especially in the north-east diagonal haulage from this shaft, reef of good width and value is being exposed. The first payable values were encountered in April and continued practically until the end of May. During that time a stretch of 512 feet has so far been opened up, the average value of which is 12·05 dwt. over 25·56 inches, equivalent to 308 inch-dwt. This footage includes a distance of 240 feet, which averages 10·9 dwt. over 36 inches, or 393 inch-dwt. During the same period four new faces were started, the sampling results of which were as follows: North-east haulage, 1 E drive: 80 feet sampled, 33·4 dwt. over 11·9 inches, 397 inch-dwt. North-east haulage, 2 E drive: 85 feet sampled, 27·5 dwt. over 14·2 inches, 390 inch-dwt. South-west haulage raise: 80 feet sampled, 25·53 dwt. over 27·5 inches, 696 inch-dwt. East haulage raise: 145 feet sampled, 11·5 dwt. over 24·8 inches, 285 inch-dwt.

Springs Mines Results.

Springs Mines is obtaining good values in the western portion of its property immediately adjoining West Springs boundary. Development in this area has proved conclusively that the richer ore runs in distinct shoots, and their location and direction is so indicated in Springs Mines workings that their continuance into West Springs property is confidently anticipated.

Cash Position.

The working agreement entered into with Springs Mines, Ltd., in September, 1918, has greatly facilitated the development of the West Springs property. Fortunately, little damage was done to the property during the strike, and on the resumption of operations the mine was speedily dewatered, and development work is now in full swing. At the end of the year the company had about £190,000 still to be called on its partly paid share capital, and, in addition, had cash and cash assets amounting to about £120,000, making a total of £310,000.

SHAMVA MINES.

Shamva Mines has declared an interim dividend of 7½ per cent (1s. 6d. per share), less tax at 2s. 0·75d. in the £, for current quarter (being second interim dividend for 1922), payable 13th July.

VAN RYN MINES.

Van Ryn Gold Mines Estate has declared dividend No. 37 of 5 per cent. (1s. per share), free of tax, for the half-year ending 30th June.

RYLANDS' STEEL WIRE ROPES

MANUFACTURED BY:
RYLANDS BROTHERS, LTD.,
WARRINGTON, ENGLAND.

SOLE REPRESENTATIVES FOR UNION OF SOUTH AFRICA:—
ARMSTRONGS & MAIN, LTD.,
84, Marshall Street,
JOHANNESBURG.
P.O. BOX 5988. **'PHONE 5203.**

LARGE STOCKS ON HAND.

SPECIALISTS ..

IN THE MANUFACTURE AND DESIGN OF

STRUCTURAL STEELWORK.

ARMSTRONGS & MAIN, LTD.,
GENERAL AND CONSTRUCTIONAL
.. ENGINEERS, ..
84, Marshall Street,
JOHANNESBURG.

P.O. BOX 5988. **TELEPHONE 5203.**

Central Mining Interests.

GOLD, DIAMONDS AND BASE METALS.

An Authoritative Review.

Although the annual report of the Central Mining and Investment Corporation is this year without Mr. H. F. Marriott's usual technical and statistical review, it is full of important matter of general interest.

During the year under review, the report says, business was carried on under unsettled and unfavourable conditions, detrimental to going concerns and stifling new enterprise, but towards the end of the year a change for the better became noticeable. Cheaper money here and abroad, the gradual recovery of the £ sterling in its relation to gold parity, and an uninterrupted demand for as well as a considerable appreciation in the value of British Government securities, were the welcome signs that the severe depression from which the country had been suffering was lifting. Each of these factors in turn reacted on the other, and, notwithstanding the disturbing presence of political problems, their combined force has, since the turn of the year, enabled numerous credit operations of magnitude to be carried through with such ease as to leave no doubt that London is successfully reasserting its place as chief market for the securities and products of the world.

Some of the corporation's interests have benefited to a moderate extent by this rally, but the return of confidence in general and the satisfactory change in outlook is of greater moment from the standpoint of its more important holdings. Their composition has, owing to the absence of favourable opportunities, undergone few and inconsiderable changes in proportion to the magnitude of the corporation's investments and the wide range over which they are spread. The revenue derived from them has been satisfactory, due in part to dividends which, although received during the year, had been earned in preceding and more prosperous periods. Depreciation, however, rendered writing down necessary in many cases, and, to counteract the effect, those of the holdings which had formerly been stocked at very low prices were written up to a level nearer market prices. Nevertheless, on balance, lower net profits resulted.

The Gold Mining Position.

The profits earned and dividends declared by South African gold mining companies fell considerably short of the previous year, due partly to the lower price of gold and partly to the maintenance during many months of high prices for stores, but chiefly to the uneconomic system as applied to white labour which grew up during the war and persisted afterwards. The introduction of radical changes in regulations and wages became inevitable, but the effort to carry them into effect resulted in a general strike on the Rand which, under the influence of revolutionary and Comunistic elements, degenerated into an outbreak of serious violence. Fortunately, Government forces succeeded in speedily re-establishing order. The conflict, in its various stages, lasted from the beginning of this year to nearly the end of March, and was the cause of much loss of life and suffering as well as substantial material loss, but practically no damage was done to mining property. Work was resumed directly circumstances permitted under conditions which, there is ground for believing, will place the mining industry in a better position industrially than it has enjoyed for a good many years. The native labour position and the tonnage output do not compare unfavourably with the previous year.

Gold Share Market.

The gold share market was under the influence of the general economic depression and the disabilities under which work in the mines was being carried on, but, quite apart from this, no activity could be expected as long as the large blocks of ex-enemy shares in the hands of the British and South African Governments remained unrealised. The directors are glad to report that these holdings have at last been dealt with by the Custodian of Enemy Property in South Africa. The shares in the companies of this group, to the value of about £2,600,000, were bought by the corporation, which secured co-operation by forming a syndicate that enabled a large number of interested parties to participate in the transaction. The arrangements made with the syndicate provide, in consideration of a commission, for an offer of these shares at original purchase prices to the companies concerned, and, in two exceptional cases, for an approximate pro rata offer to shareholders.

Diamond Revival.

Business in diamonds has been negligible throughout the year, and the present accounts provide for considerable depreciation upon the corporation's interest in the stock of diamonds held by the syndicate. Arrangements have been made with the producers to meet present market conditions, and the trade is showing distinct signs of revival.

Base Metal Interests.

The Rhodesia Broken Hill Development Co., Ltd., has established fresh records in its lead production at reduced cost, enabling it to earn fair profits in spite of the low prices ruling for the metal.

The operations of the Premier Hydraulic Tin Mines of Nigeria, Ltd., on the other hand, were affected by the severe fall in the price of tin which occurred before the company was ready to produce on a larger scale by improved methods. The funds originally destined for their introduction became exhausted without having served this purpose, and in order to permit the ordering of a first section of suitable plant, an issue of 8 per cent. first mortgage debentures was made, to which the corporation subscribed.

Oil, Coal, &c.

The considerable item appearing in the accounts under "Oil, Coal, Industrial and Sundry" embraces a very large number of interests, of which the majority are South African undertakings.

A substantial portion of the amount appearing under "land companies and properties" is represented by cash owned by companies of which the entire share capital or the major portion belongs to this corporation. The increase shown under this heading is due to a higher valuation of these assets and to further purchases of Transvaal Consolidated Land shares.

Ex-Enemy Shares.

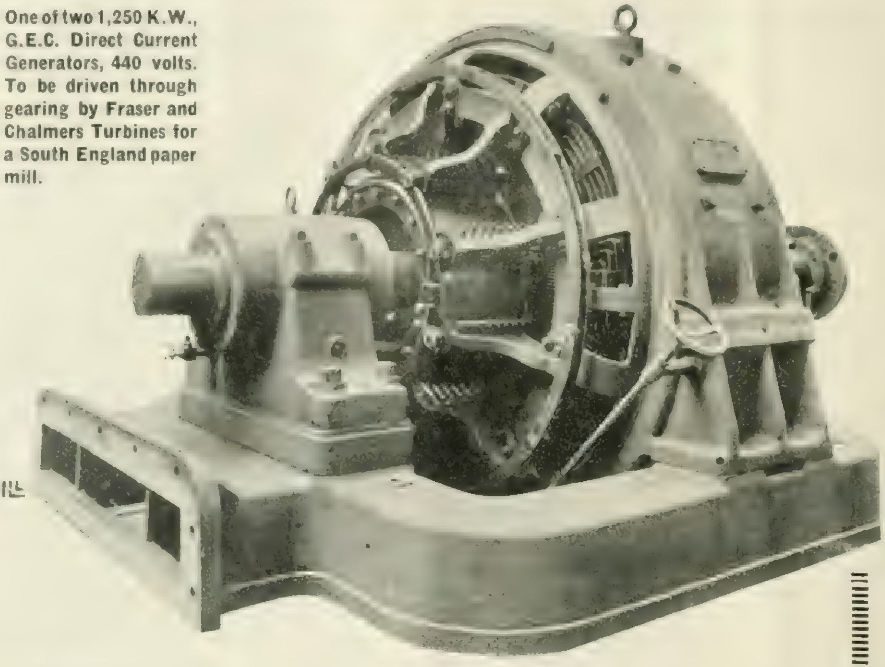
The Financial Times says: Surprise is expressed in the market at there being no information yet in regard to what the General Mining group intends to do about the Meyer and Charlton and other shares purchased from the South African Custodian. Meyer and Charlton shareholders are expecting to get some modest bonus out of the business, but up to the present no information on the subject has reached them. The usual half-yearly dividend of 10s. per share has been announced.

MAGNOLIA
ANTIFRICTION METAL
"FLOWER" BRAND.

HAS THE LOWEST CO-EFFICIENT OF FRICTION.

KEEPS down the bill for lubricants, making **BEARINGS** smooth as glass and keeping them **COOL** under heaviest pressures and highest speeds.

Manufactured and Sold By—
THE MAGNOLIA ANTI-FRICTION
METAL CO. OF GREAT BRITAIN, LIMITED.
49, QUEEN VICTORIA STREET, LONDON, E.C.
Agents for South Africa: FRASER & CHALMERS, Ltd., Johannesburg,
Bulawayo and Salisbury



One of two 1,250 K.W., G.E.C. Direct Current Generators, 440 volts. To be driven through gearing by Fraser and Chalmers Turbines for a South England paper mill.

B.G.E.C.

Generating Plant

FOR FACTORY ELECTRIFICATION

THE General Electric Co., Ltd., for whom the B.G.E.C. are sole agents, have exceptional facilities for the manufacture of Heavy Electrical Plant for all Industrial and Commercial requirements.

Engineers and promotors of large engineering schemes should realise the advantage of placing their contracts with a firm which manufactures within its own organisation everything requisite for complete electrical installation.

The British General Electric Co. Ltd

REGD TRADE MARK

REGD TRADE MARK

Representing THE GENERAL ELECTRIC CO., LTD., of England

Head Office :—

Johannesburg

Corner Loveday and Anderson Streets

Box 2406 Phone 4242 3 Tel.: "Current"

Capetown

83 89, Castle St.

Box ——— 1327

Phone ——— [illegible]

Tel. —"Induction"

Durban

56, Field Street

Box ——— 922

Phone ——— 1793

Tel. — "Ampere"

Agents at:—Port Elizabeth, East London, Maritzburg, Bulawayo, Delagoa Bay, Beira, Dar-es-Salam, Tanga, Zanzibar, Mombasa, Nairobi, Uganda, Etc.

Increased Native Efficiency and What it Means.

DIRECTOR OF NATIVE LABOUR INDICATES POSSIBILITIES OF GETTING MORE AND BETTER WORK OUT OF THE NATIVE.

The following is a summary of the statement (No. 1) on which Colonel S. M. Pritchard, Director of Native Labour, was examined before the Mining Industry Board. The witness called attention to his evidence given before the Low Grade Mines Commission, when he said: It is urged that one of the most formidable difficulties that confront the low grade mines is the shortage of native labour. There would appear to be three possible methods of combating such a shortage: (1) Effecting an increase in the native labour force by increasing the supply from existing sources; (2) stretching the efficiency of the individual labourer and thereby making a better use of the existing labour supply; (3) tapping unexploited sources of supply. The interests of the mining industry, of the European workers, and the native labourers are interdependent. Recent experience during strikes among both classes of workers compels one to the conclusion that the degree of dependency of the European worker on the native is, in fact, greater than that of the native on the European worker. It is of infinite national importance that the position of the native labourer in the mining industry be treated with wisdom and foresight. One cannot fail to appreciate the attitude of the employer who is expected to employ an expensive European to perform work which, in his opinion, an intelligent, and comparatively cheap, native can perform as well; one must sympathise with the European worker who argues that he cannot compete in the semi-skilled and unskilled classes of work with natives who are satisfied with daily emoluments equalling only about one-quarter of the wage that he requires in order to maintain himself in a decent manner; justice and prudence force one to the view that, generally speaking, efficiency and not colour should be the determining factor in considering what classes of work can be assigned to individuals.

A group of typical native mine "boys," whose efficiency it is now sought to improve. The waste of native labour on the mines has long been a slur upon the industry.

Three Classes of Work.

I suggest that every class of work on a mine should be scheduled under one of the following categories: (1) Skilled; (2) semi-skilled; (3) unskilled. Under (1) would be included every occupation for which apprenticeship had been served, and every other occupation which, in the opinion of the Government's technical advisers, requires expert knowledge or special intelligence and training. Under (2) would come all semi-skilled occupations. Under (3) would fall all classes of unskilled work, at present performed entirely by natives. A minimum wage, which should bear a definite relation to the value of the work performed, should be laid down for each class of work and some machinery devised for a reconsideration of these rates from time to time. The discretion as to whether Europeans or natives are to be employed on the various classes of work should be entirely in the hands of the mine management. As to the masses of the native labourers on the mines they do not bother their heads about the colour bar and status quo. When any native trouble arises on the mines, their cry invariably is "more money." Most mines cannot possibly pay them higher rates for the work they perform at the present time, but I think much can be done to promote their efficiency and so increase their wage-earning capacity.

To Improve Efficiency.

Certain methods having for their object the improvement of native efficiency, some of which have been tried but are in actual practice suggest themselves.

1. The fixing of a definite number of natives for each work gang, in accordance with the requirements of the work.

2. The allocation of each native on engagement to the particular class of work for which he may have been trained and be physically capable of performing, and if this be not immediately possible, his registration in the compound [illegible] as a native trained to a particular class of work and his allocation to that work as soon as opportunity arises.

3. The careful coaching and instruction of newly arrived native labourers and the watching of their record of work over a period, in order to ensure that each has been allocated to the work which best suits him.

4. The perfecting of a system whereby natives may be usefully employed during the whole period they are underground. If special examining shifts were to go underground about midnight, the morning shift could pass straight to their places of work and obviate a loss of working time of from one and a half to two hours.

5. The laying down of a special standard off efficiency for native "boss boys," promotion to which posts shall be subject to the passing of an efficiency test.

6. The extension of piecework and devising of means whereby natives working in gangs may share with their European supervisor in any bonus earned by the gang, no restrictions being placed on the earnings of a native.

7. The elimination of shovelling from the task of hammer boys.

8. A careful inspection of tools, so that, for instance, hand drillers may not have to work with insufficient or improperly sharpened drills or worn hammers, or natives employed on shovelling with shovels so worn that they cannot life a sufficient amount of rock.

A general increase in the efficiency of its huge labour force should enable the mining industry to: (a) Pay higher wages to the masses of their native labourers in return for increased production, and so remove their oft-expressed grievance in regard to pay; (b) reduce the native labour complements of the various mines; (c) rely on native labour available from South African sources of supply; (d) reduce working costs.

BENGUELLA RAILWAY.

Tanganyika Concessions announces that an order has been placed for a further kilometres of . permanent way material for the Benguella Railway, and arrangements are being made to ship this material early next month.

Rand Profits and Costs.

MAY AND JUNE FIGURES COMPARED.

New Modder and Modder "B" Profits Increased.

The following interesting figures compare the returns for May and June of the majority of the gold mines of the Rand in respect of profits earned and working costs. Of 31 mines it will be seen that 15 show higher costs, while 16 show a decrease. As regards profits, it will be seen that most show sbstantial increases, the biggest being that of Modder B. and New Modder, both being better by over £20,000:—

Company	Profit. May 1922	Profit June 1922		Working Costs June, 1922			
	£	£	£	s.	d.	s.	d.
Aurora West	1,543	[illegible]	*13	25	2	‡2	3
City Deeps	50,851	[illegible]	*1,019	26	6	‡1	0
Cons. Langlaagtes	[illegible]	[illegible]	*611	24	9	‡1	0
Main Reef	6,031	[illegible]	1,703	29	3	‡0	1
Crown Mines	44,672	42,768	†1,904	23	0	‡0	10
Durban Deep	1,382	1,558	*176	29	7	‡1	1
E R P M	642	8,410	*7,768	22	10	0	1
Ferreira Deep	§3,024	§1,385	*1,639	25	4	1	3
Geldenhuis Deep...	221	§2,839	†2,397	22	9	‖0	1
Govt. Areas	150,751	[illegible]	†4,360	18	7	‡1	2
Knights Central	1,287	310	†977	18	4	0	6
Langlaagte Est	13,649	12,897	†752	21	3	‡1	4
Luipaardsvlei	§1,451						
Meyer and Charlton	17,200	20,180	*2,980	23	9	0	6
Modder B's	60,965	81,629	*20,664	22	2	‡1	1
Modder East	§1,014	4,086	*5,100	33	1	‡1	7
New Goch	903	998	*95	20	4	‡0	9
New Kleinfontein	1,096	4,303	*3,207	22	11	‡1	5
New Modders	99,471	120,453	20,982	18	6	1	5
New Primrose	1,036	1,414	*378	20	4	0	2
New Unified	1,002	1,827	*825	18	7	‡1	1
Nourse Mines	8,026	5,592	†2,434	26	4	‡1	6
Randfontein Central	21,516	31,499	*9,983	22	3	1	6
Robinson G.M.	4,043	6,086	*2,043	22	4	2	5
Roodepoort M.R.	§927	§1,400	†473	21	2	0	3
Rose Deep	6,486	9,295	*2,809	19	10	‡0	6
Van Ryn Est	3,816	5,091	*1,275	21	5	2	0
Van Ryn Deep	62,490	62,036	†454	22	1	‡1	6
Village Deep	10,982	12,505	*1,523	23	3	1	2
West Rand Cons.	3,383	4,009	*626	24	5	‡0	11
Wit. (Knights)	11,156	11,580	*424	20	3	1	5
Wolhuter Gold	§1,511	2,512	*1,001	20	6	0	2

* Increase. † Decrease. ‡ Higher. ‖ Lower.

The Mining Law Amendment Bill.

We understand that the Mining Law Amendment Bill, which has been under consideration by a Select Committee for some time, has been held over till next session. The Bill has a number of clauses of a contentious nature, and the various interests affected will doubtless welcome the extension of time for considering their effect.

The Great Randfontein Mill.

The great mill of the Randfontein Central, which is now surmounting all difficulties and getting into its stride.

Asbestos.

SOUTH AFRICAN OCCURRENCES.

A Succinct Review.

For the following succinct account of the asbestos occurrences in South Africa we are indebted to an American Government publication.

South African Asbestos.

Promising tracts of asbestos have been opened up in Natal, Transvaal, and Cape Province, in the Union of South Africa; and in Southern Rhodesia. Owners of these tracts have been particularly active during recent months in their endeavour to attract American capital for the further development of the deposits. Blue asbestos, known technically as crocidolite, has been mined in the Cape Province for the past 25 years. Operations have been confined largely to the fields in the Prieska and Hay districts, but other parts of the Province are known to be rich in these deposits. Official reports indicate that a certain percentage of the material mined is found to be rusty and discoloured. The former is rejected altogether, but the latter is, after clarification, placed on the market at a reduced price. Due to the difference of the classification of the asbestos mined in the Union of South Africa, it is difficult to form a reliable estimate of the average length of the fiber, but the opinion that about 25 per cent. of the total output is 1 inch or over is quite generally accepted. It is also difficult to determine an average of the asbestos yielded per ton of rock mined in these fields, but it has been reported that the South African yield is greater than that of the other asbestos-producing fields.

Carolina Asbestos.

The chrysotile mined in the Carolina districts has for a long time been widely known on account of its high qualities. Tracts of blue asbestos, sometimes over 100 miles in length, are known to exist in this zone. Blue asbestos does not bear high temperature, probably on account of the iron content, but it is longer, stronger, finer, and more elastic than chrysotile. On account of its low fusibility it is useful in electric welding, and on account of the length of its fibre and tensile strength it is highly adaptable for spinning purposes.

The deposits of chrysotile asbestos in the Transvaal are of very fine quality. This Province has, in addition, deposits of crocidolite, amosite, and tremolite. Amosite is found chiefly in north-eastern Transvaal, near Lydenburg and Pietersburg. In the year 1915 the total output of asbestos in the Transvaal was only 49 tons, but by 1917 the annual output had risen to 3,193 tons, which fact is in some way indicative of the possibilities of these deposits. In the Transvaal crocidolite occurs only at the Haenerdsburg gold fields and the Malips River areas of the Pietersburg district. Tremolite has been exploited only on the Kores Farm, north of Mara Siding, in the Zoutpansberg district. Samples of the product of this farm are, at the time of this writing, in circulation among the district offices of the Bureau of Foreign and Domestic Commerce.

Cape Deposits.

Crocidolite is worked quite extensively in the Cape Province. The area in which this variety is mined is located about 20 miles south-east of Prieska in a northerly direction as far as Mashowing River, British Bechuanaland. The fibre is usually lavender blue, but colour variations are not uncommon, particularly in the Daniels Quil Kuruman areas, where the colours are pale yellow and rusty brown. These latter fibres are harsh and command only a limited sale on the market.

Fine Types.

For matters of classification, five types of this fibre have been graded. Fibre up to one-eighth inch in length is classified as Grade A. Grade B consists of fibre from one-eighth to three-eighths inch long. Fibre from three-eighths to 1¼ inches in length is classified as Grade C. Grade D is from 1¼ to 2 inches in length. Grade E includes all fibres of 2 inches and more in length. In the latter part of 1921 the best sale price for Grade A averaged about £20; Grade B, £30; Grade C, £40; Grade D, £50; and Grade E, £60 per ton. It is reported that at present the fibre is mined, graded, bagged, and landed at convenient port for export at a total cost of about £17 per ton.

Natal Occurrences.

There are a few occurrences of chrysotile in Natal. The principal area in which asbestos is produced in this Province is situated between Eshowe and Krantzkop in the Tugela Valley, Zululand. Both chrysotile and amphibole asbestos occur frequently in many localities in Southern Rhodesia. The chrysotile deposits are mainly in the Victoria and Belingwe districts. The fibre mined in the Victoria district is rarely more than three-fourths inch in length and it is graded according to two classifications—No. 1, the fibre three-fourths inch or more in length; and No. 2, fibre between five-sixteenths and three-fourths inch in length.

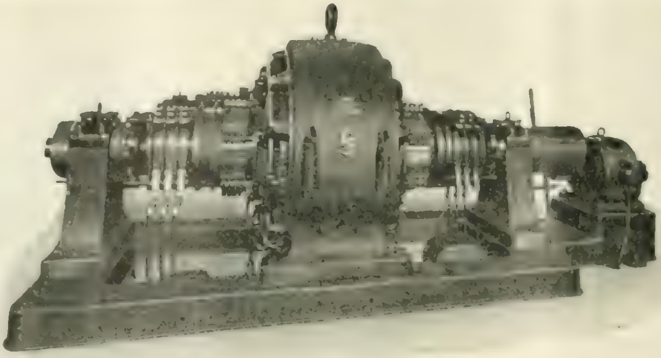
The following table gives the South African sales and shipments of asbestos, according to Provinces, during the period from 1914 to 1921, the quantities being stated in short tons:—

Provinces.	1914. Tons.	1915. Tons.	1916. Tons.	1917. Tons.	1918. Tons.	1919. Tons.	1920. Tons.	1921. Tons.
Cape of Good Hope...	1,160	2,083	4,228	2,999	2,739	3,204	3,526	......
Natal		...	21	28	5	98	45	......
Transvaal...	30	56	407	3,193	930	631	3,541	......
Total, Union of South Africa	1,190	2,139	4,656	6,220	3,674	3,933	7,112	5,126
Southern Rhodesia ...	487	2,010	6,157	9,561	8,574	9,740	21,082	21,883

The "Transverter."

One of the fundamental problems for the electric engineer is to change alternating current into continuous current or direct current. This change has to be made for a variety of reasons, and it is exceptionally important in the case of electric railway working, where many engineers advocate the use of direct current at very high pressure. Two British engineers have been devoting their attention to this matter and have devised a machine which provides far and away the most efficient means of producing high pressure direct current from the alternating current generally produced by steam turbine-driven electric generators. It is impossible to describe this machine without elaborate technicalities, but we may state that the first machine made, which has been under test successfully for about fifteen months, changes alternating into direct current at 100,000 volts with an efficiency of about 95 per cent. The original design was so excellent that subsequent tests have not led to any material alterations. This machine, which is called a "Transverter," because it first transforms and then converts the current, is expected to be of immense value in the electrification of railways and also in the linking up of electric power stations, which is so necessary to economy in the public supply of electricity. This machine may therefore be regarded as having passed through the experimental stage. Machines with an output of over 700 horse-power are expected to be at work in the near future.

Mining Syndicates and Small Mines can Reduce their Working Costs by installing
"A LANE SLOW SPEED CHILIAN MILL."
For particulars apply:
J. P. ENGEL, P.O. BOX 2582, JOHANNESBURG.
'PHONE 1621.



SIEMENS-SCHUCKERT
CONVERTING
PLANT

ROTARIES, MOTOR GENERATORS, CASCADE CONVERTERS (Arnold-Bragstad-Lacour Patents).

Our Works have built over 250,000 k.w. in Rotaries alone.
Take advantage of our unrivalled experience.

SEND YOUR ENQUIRIES TO—

C. KLEUDGEN, LTD.,
Corner of LOVEDAY and MARSHALL STREETS, JOHANNESBURG.
P.O. Box 1164. Telegrams: "KLEUDCO." Telephone Central 5435

Kinghorn
Metallic Valves

SOLE AGENTS:
GEO. CRADOCK
AND CO. (S.A.), LTD.
75-77, CULLINAN
BUILDINGS.

P.O. Box 316. Telephone 539.
Tel. Add.: "ROPES."
JOHANNESBURG.

ROBINS CONVEYOR PULLEYS

¶ Conveyor Pulleys must be of special design because of their slow speed of rotation and the consequent heavy strain on the end pulleys.

¶ Robins Conveyor Pulleys are the product of careful thought and long experience in design and manufacture.

¶ All pulleys are cast in one piece of the best grey iron to eliminate the breaking of shafts and pulleys when pulleys made sectionally and bolted together are used.

¶ The arms and rims are heavily ribbed, thus allowing a proper flow of metal in pouring, to prevent shrinkage strains.

¶ The rims are finished with extra high crowns.

¶ Standard sizes of End, Bend, and Snub Pulleys carried in South African Stock for prompt delivery

Robins Conveyors (S.A.), Ltd.
(*Head Office: Robins Conveying Belt Co., New York, U.S.A.*)
BOX 4736, 'PHONE 4182, JOHANNESBURG
BOX 811, 'PHONE 3383, DURBAN

The South African Mining and Engineering Journal.

HEAD OFFICE: 176-180 Stock Exchange Buildings (2nd Floor), Fox Street, JOHANNESBURG, Union of South Africa.

Telephone **913**. P.O. Boxes **963** and **4573**.

Cables and Telegraphic Address: "MINING JOURNAL."

ANNUAL SUBSCRIPTION RATES: Oversea, £2; Union of South Africa and Rhodesia, £1 10s.; Local Delivery (Town only), £1 6s., payable in advance.

AGENTS FOR GREAT BRITAIN AND AMERICA: Argus South African Newspapers, Ltd., Byron House, 82-85, Fleet Street, London, E.C. 4.

Copies of this Journal are obtainable at all Branches and Agencies of the Central News Agency, Ltd., at all News Agents and Railway Bookstalls throughout South Africa, and at the London Agency as above.

CONTENTS. PAGE

The Improving Prospects of Modder B . . . 1495
The Outlook for West Springs . . . 1497
Central Mining Interests . . . 1499
Increased Native Efficiency and What it Means . . . 1501
Asbestos . . . 1502
Rand Costs and Profits . . . 1502
Topics of the Week . . . 1505
Waste in Mining . . . 1508
The Week in the Sharemarket . . . 1509

Rhodesian Section:

June Output: Group Returns . . . 1510
Letters to the Editor . . . 1511
Waste Rock in Ore Milled . . . 1513

Trade and Industries Section:

The Week in the Mining Material and Engineering Trades . . . 1517
Company Meetings: Crown Diamonds . . . 1521

TOPICS OF THE WEEK.

A Banker's Review.

The elaborate analysis and explanation of the losses incurred by the National Bank last year given by the Chairman, Mr. James Leisk, C.M.G., at the annual meeting last week, should satisfy shareholders that the worst is now known and provided for. After all, the shareholders are the people chiefly concerned, and the stability of the bank, which is all that matters to the public, remains unimpaired. Regarded as a general financial review of the year, Mr. Leisk's speech was informative and entirely to the point. His exposition of the functions of the Reserve Bank *vis a vis* the commercial banks, will be read with interest, and his remarks on the currency question, on the gold mining industry, coal prospects, taxation and trade conditions in general were sound and timely. The new Chairman of the bank is already displaying the grip of the position which might have been expected from one of his record and experience. He has turned to the best advantage the unique opportunity presented him to remould the bank's policy, and under his skilful guidance the institution will now doubtless enter upon an era of steady progress. Mr. Leisk's view of the outlook may be put on record here in support of those who think the corner has been turned. "I think," he said, "that there is every reason for taking a most confident view of the future. Moreover, our observation of business conditions generally throughout the different countries in which we are represented is, most distinctly, that the corner of depression and stagnation has been rounded, and that a tendency towards a slow but steady return to better conditions is manifesting itself. The banks, naturally, must benefit directly and indirectly through the restoration of normal conditions, and this affords an added measure of confidence in the future. A factor in South African economics that is often lost sight of is that, in comparison with most other countries, the Union had a relatively small proportion of unreproductive public debts. Thus, our system of public finance possesses, in corresponding degree, a greater measure of flexibility than is enjoyed by these other countries, with the result that our powers of recuperation from financial crises are proportionately stronger. So soon, therefore, as world conditions begin to mend, South Africa's relative economic advantage, upon which I have just touched, should prove a powerful factor in securing for her a more rapid return to prosperity than can be hoped for by countries less fortunately situated in this respect. Of course, the recent disastrous strike on the Rand has occasioned serious loss, not alone to those immediately concerned, whether as employer or employee, but also to that very large section of our community, throughout the length and breadth of this land, that is directly or indirectly dependent upon the active conduct of gold mining operations. Nevertheless, it would seem that there is a substantial prospect of the country being compensated for these losses owing to the industry being now established upon a basis more in keeping with the economic necessities of present-day conditions. This is another favourable point in our outlook, and, taken in conjunction with the recent removal of the enemy share menace, it should stimulate a revival of interest in the mining industry and the flow of capital from outside for the development of our untouched mineral resources."

Coal Prospects.

An authoritative view on the position of the coal industry was given by Mr. J. T. Rennie, of Durban, at the National Bank meeting at Pretoria last week. Speaking on the coal industry, Mr. Rennie said the disappointment in that industry was due entirely to the way in which they had been dealing with it. The Government would not recognise that if there was to be success in the coal industry the fact of world competition must be faced. There were two great disabilities—high railway rates and the lack of facilities at the ports—which if not remedied would prevent this country from getting the trade it should have. It was essential always to have big stocks of coal on hand at the ports, for the success of shipping depended upon prompt despatch. If ships could be supplied with coal in 24 hours they would get the trade, but not when there was an uncertainty as to whether it would be a day, a week, or a fortnight. Proceeding, Mr. Rennie emphasised the desirability of bringing every pressure to bear upon the Government in this matter. There was great irritation in the shipping world against South Africa in respect of the coal trade. Coming from such a quarter, this criticism carries considerable weight, and will doubtless be noted and emphasised in the Union Parliament by the members for the colliery districts.

The Diamond Outlook.

The week has produced several more important pronouncements on the outlook for diamonds. General Smuts at Swellendan vouchsafed the opinion that an improvement [illegible] to agree with the Chairman of the National Bank said the demand was still far from being what was necessary to revive the industry. At the New Jagersfontein meeting the Chairman said: "We have gone through an unprecedented depression in the diamond trade, and it was only our confidence in the future of the industry and our desire to maintain employment as much as possible, which justified our production in putting the company's finances to such a severe strain. I am glad to say, that during the last few months some sales have been made by the syndicate, in which we naturally participate according to our agreement, but the demand is still very restricted. Shareholders will be anxious to hear on this occasion what their directors think of the future prospects of the Company. We believe we are slowly emerging from the crisis which has overtaken the diamond industry. Trade and business generally in the United States, in spite of the strike of the coal miners in that country, is improving, and whilst affairs in Europe are far from settled, as quite recent unfortunate events have shown, signs are not wanting that the nations in Europe are desirous of reconciling their differences, and if efforts in that direction meet with success, the world's trade and finances are bound to improve, and by such a consummation our industry will benefit and expand."

Heidelberg Gold Reefs.

In connection with the articles which have recently appeared in this paper, contributed by Mr John Moffat, we are informed that the Minister of Mines instructed Mr. C. E. Hutton, Inspector of Mines for Germiston and Heidelberg Districts, to obtain from Mr. Moffat maps, reports and all data possible regarding the further extension of the Main Reef Series, and also to forward a report on the district to the Government, who are anxious to devise a means of re-establishing confidence in those goldfields. This report has now been completed and forwarded to the Minister of Mines at Capetown. A deputation from the Heidelberg District Goldfields Vigilance Committee recently waited upon the Prime Minister and the Minister of Mines and discussed matters relating to the proclamation of certain farms in the Heidelberg district. In reply to the deputation, the Minister stated that the geological evidence clearly indicates the existence of the Nigel-Main Reef on those farms. The Minister is hopeful that by bringing pressure to bear on owners along the Main Reef outcrop or sub-outcrop he may induce them to prospect their ground more energetically than has hitherto been done, or induce them to throw the ground open to prospecting. With this object in view he has given instructions to inquire into the circumstances of these farms with a view to taking action in each case. We presume that, failing the owners carrying out the wishes of the Minister of Mines, legislation will be introduced with the object of proclaiming those farms, and either throwing them open for pegging or leasing them as mineral areas, as has been already done on the Far East Rand. This would be a very effective way of proving a stretch of 30 miles of Main Reef outcrop, which at present is locked up by the owners of the farms, who will neither work the ground themselves nor allow others to prospect it, except on impossible conditions.

The Delville Wood Memorial.

The campaign to raise funds for the Delville Wood Memorial was begun this week by an inspiring appeal from Sir Percy Fitzpatrick. His address at the Selborne Hall meeting has been printed in the daily papers, and it should go far to hasten the flow of subscriptions to this noble cause. Sir William Dalrymple has published a preliminary list of subscriptions from leading mining and commercial houses, and an organised canvass is to be made for the fund. In honouring the dead of the South African Brigade who lie at Delville Wood, South Africans are honouring themselves, and Johannesburg will no doubt come forward with its usual generosity for this splendid object.

Notes & News.

Piet Retief Find Proves Unpayable.

The secretary of the Oceana Consolidated Company writes to the London papers with reference to the paragraphs which have recently appeared in the Press regarding the interest of this company in alleged gold discoveries in the Piet Retief district of the Transvaal. The following cable has been received from the company's Johannesburg representative: "Engineer has returned and reports existence several conglomerate reefs, but practically without value."

* * *

B.S.A. Explosives.

The net profit for the year ended 31st December, 1921, after payment of taxes and writing off values £26,659, is £35,924, against £50,139. With the carry over from the preceding year, the available profit is £111,077. It is proposed to pay a dividend of 10 per cent., the same as in 1920, payable on 24th June. The majority of the shares being in the hands of Nobel Industries, this company will henceforth take over the control of the British South African Explosives Company. In the balance sheet the assets stand at £296,444 and the liabilities at £190,230.

* * *

The Market Outlook.

Writing about the outlook for South African mining shares in mail week, *The Financial Times* says: "What with the holiday atmosphere and with the political horizon still cloudy, would-be speculators appear disposed to pursue a watching policy in most directions. Nevertheless, on the Stock Exchange as elsewhere, it is often the unexpected that happens. The Kaffir market has never forgotten that the most famous boom in its history—that of 1895—commenced in the "dog days." History rarely exactly repeats itself. None the less, it would be by no means surprising if Kaffirs at any rate attracted much greater attention once the half-yearly dividend declarations now being announced are finally out of the way. The omens for the second half of 1922 are brighter, so far as the Rand is concerned, than for any similar period for a long time past."

* * *

The late Captain C. B. Saner.

A wide circle of friends on the Rand regret to learn of the death at Port Elizabeth of Captain C. B. Saner, at the early age of 49 years. Deceased was the eldest son of the late Captain Charles Taylor Saner, at one time manager of the Rietfontein Co., and a pioneer of the Rand. Captain Saner left the Rand about 1917 to farm on the Sundays River near Addo. During his long residence in the Transvaal he was manager of the Transvaal Gold Mining Estates, Pilgrim's Rest, Luipaardsvlei G.M. Co., and the Turf Mines Section of the Village Deep. He was responsible for the sinking of the Turf Mines shaft. He always took an active part in military matters, and during the South African War was a captain in the Railway Pioneer Regiment of Engineers, and subsequently became Colonel of the Witwatersrand Rifles, but failed to pass for overseas duty during the Great War. The deepest sympathy of the whole mining community goes out to his relatives.

* * *

Johannesburg's New Loan.

The Finance Committee of the Johannesburg Town Council reports as follows regarding the proposal to raise a new loan of £1,000,000: The committee has on several occasions entered into negotiations with the Council's bankers and financial houses for the purpose of making preliminary arrangements for a loan of £1,000,000 for various works of a capital nature required by different committees. We have found it extremely difficult to pursue these negotiations to a stage when it would be possible to submit particulars to the Council, as, in many instances, the offers made hold good for a short period, which does not, under ordinary circumstances, give us an opportunity of considering them and subsequently submitting them to the Council for acceptance or otherwise. Under the circumstances, we submit that the Council should authorise this committee to enter into negotiations and to accept any offer of a loan which would appear to us to be favourable. The Council will be asked, when an agreement has been arrived at, to fix by resolution, in accordance with the Borrowing Powers Ordinance, the conditions of the issue of the stock.

* * *

The late H. S. Theron.

The death has occurred of the Hon. Hendrik Schalk Theron, who was well known in mining circles. The late Mr. Theron was a Free Stater, and was prominent some years ago in Union politics, sitting as member for Hoopstad in the House of Assembly, and being at one time Minister of Lands in the Union Government. Mining engineer and farmer, Mr. Theron, who was 53 years of age, was born in the Winburg district, and received his education at the Grey College, Bloemfontein, the Victoria College, Stellenbosch, the Cape University and the Royal School of Mines, London, and was an Associate of the last-named body. In 1896 he joined the O.R.C. Civil Service as Inspector of Mines at Koffyfontein, and was afterwards Resident J.P., while he also did duty as Inspector of Mines at Kaalvalley and the Lace Diamond Mine. During the South African War he was Commandant of the Search Light Force operating round Ladysmith. As a prisoner of war he was deported to India in November, 1901, returning to South Africa at the beginning of 1903, after which, for some time, he was engaged in prospecting work. The late Mr. Theron was a progressive farmer, being attracted to the land in 1905, and he took a keen interest in the farmers' co-operative movement. He was one of the founders, and at the time of his death one of the directors, of the S.A. Co-operative Union. As a sheep and cattle breeder he made some mark, and the progeny from his flocks and herds at Hibernia, his place in the Free State, were sought after.

* * *

Where Our Coal Goes.

The following table is of interest, as it shows the expansion of the South African coal trade with the East, and, although the figures indicate satisfactory progress, they should not be regarded with undue optimism, as the abnormal export was probably caused by labour unrest on the English coal mines.

	1913. Tons.	1919. Tons.	1920. Tons.	1921. Tons.
India	242,056	43,361	18,439	850,045
Ceylon	67,073	170,959	57,444	267,190
Aden	—	351,793	138,353	150,807
Straits Settlements ...	34,157	44,503	5,645	20,392
Mauritius	2,877	44,676	72,860	45,344
Egypt	—	92,717	305,526	230,939
Madagascar	2,075	18,104	24,594	20,749
Other French possessions	2,924	61,114	140,923	19,409
Portuguese India ...	—	—	—	33,733
Dutch East Indies ...	—	4,992	963	6,477

In addition 41,294 tons were sent to Portuguese East Africa (in 1920 35,470 tons), 9,339 tons to Portuguese West Africa (10,166 tons), 10,894 tons to Turkey, 18,097 tons to the Argentine (152,178 tons), 5,819 tons to Brazil (23,374 tons), 3,039 tons to Chile (2,495 tons), 8,821 tons to Uruguay (16,223 tons), 6,476 tons to New Zealand (7,556 tons), 14,285 tons to Kenya Colony (37,345 tons), 12,422 tons to Zanzibar (8,191 tons), 8,157 tons to the Falkland Islands (8,988 tons), and 7,739 tons to Portugal (7,961 tons).

* * *

A Tin Restriction Scheme.

The present price of not much over £150 per ton for tin is an unprofitable one to all but the most cheaply run producers, and not over-remunerative to most even of them. It compares with a record of over £400 touched two years ago and an average of nearly £200 for each of the three full years preceding the war. In the hope of remedying the present crisis an interesting output restriction scheme has just been put forward in Malaya. Many people will hope that it will secure more support than the somewhat similar plans which have been considered by rubber producers. The suggestion is that all the registered tin mining companies in Malaya should agree to suspend production for one year. It is evidently not believed that the local Chinese syndicates would be willing to come into the scheme. The Federated Malay States Government would be asked to grant an option at £180 per ton over the 10,000 tons it bought in the early part of 1921 at an average price of £210 per ton. It is suggested that the Government would be able to get back its loss by imposing an extra duty in proportion to each substantial rise in the export price of the metal. The option holders would agree not to sell at less than, say, £250 per ton. If by such a plan the price of the metal could be substantially raised and at the same time the Eastern Government stocks got rid of without a corresponding addition to market stocks, then it is contended that the whole tin position would become stabilised. Producers a year or so hence would then be once more able to look after themselves individually, especially if by that time the world trade revival had definitely set in.

* * *

The Price of Money.

The Bank of England rate of discount was reduced on Thursday, June 15, to three and a half per cent. The bank rate rose on the outbreak of war in August, 1914, from 3 to 5 per cent., at which figure it remained for about two years, then increased to 7 per cent. It began to fall again about the middle of 1921, and in June last year was 6.35 per cent. Since then there has been a steady reduction to a figure that is now only half per cent. above the pre-war rate. The reduction of the rate is generally welcomed as assisting the trade revival and releasing money for foreign and Colonial enterprises. In making its decision, the bank was undoubtedly influenced by the recent reduction of the American money rate. Another factor is believed to be the Government's desire to avoid undermining the confidence in gilt-edged securities, in view of the large loan operations pending, and also the big Indian loan which is at present on the market. Judging from the latest reports received by mail from London, there does not appear to have been any general expectation of a reduction in the bank rate. The advices state that a distinct decrease in the supply of money in the early part of last week in May was expected when the official accounts were published, showing that, owing to heavy sales of Treasury bills and excess of revenue over expenditure, the Treasury had been able to repay all the Ways and Means advances from the Bank of England. On Thursday morning (May 25) money was decidedly scarce, and the rate for day-to-day advances ranged up to 2¾ per cent., but the supply soon became more plentiful, owing either to disbursement by the Government or to arrangements made with a view to easing the market and stimulating its appetite for Treasury bills. The three-months rate for commercial bills was quoted in some quarters at 2 7-16 per cent., but 2⅜ per cent. was a practicable rate, especially after the announcement of the Treasury bills allotments.

GOLD MINE, NORTHERN TRANSVAAL.
£2,500.

Partner, Sleeping or active, with above capital for a producing Gold Mine. Five stamps working with 45 h.p. National gas suction plant and complete cyanide works. Capital required to increase plant and further development of property.

APPLY:

"GOLD MINE,"
S.A. MINING & ENGINEERING JOURNAL,
P.O. Box 963. JOHANNESBURG.

Waste in Mining.

SYMPOSIUM ON THE QUESTION—PROSPECTING AND MINE EXAMINATION—VIEWS OF MESSRS. FOSTER BAIN, POPE YEATMAN, AND W. R. IGNALLS.

At a joint meeting of the Mining and Metallurgical Society of America, and American Institute of Mining and Metallurgical Engineers, several papers of more than passing interest were devoted to the various aspects of the question of waste. In the first of these papers, Mr. Foster Bain, Director of the United States Bureau of Mines, dealt with the "waste involved in preliminary investigation of mineral deposits.

Mr. Bain's observations are not without their application here. He justly remarks that a vast amount of money is spent unnecessarily on re-examination of properties, and he mentions that, while in England in 1916, he and Mr. Edward Rickard attempted to organise a plan whereby mining engineers might, with the consent of their class, turn over to a central organisation their reports on properties they had examined, which would be accessible to others on payment of a fee. Mr. Bain states that the suggestion met with much success—which on the whole is rather surprising. Too often the mining engineer looks upon the information which he has acquired from boreholes and otherwise as his peculiar stock-in-trade, and he is very jealous of passing on such information to others. From this source, indeed, comes the main opposition to the proposal to form a national registry of borings, although there is a not unreasonable fear that when a Mines Department begins to store plans of abandoned mines and similar data, it straightway endeavours, so far as it is able, to render the information inaccessible to those who have a use for it.

Mr. Foster Bain also remarks that a great deal of money has been wasted in the past by superficial examinations; and also by the handling of industry by people of small capital and small experience. Nevertheless it is remarkable how considerable a part such people have played in the development of the mineral industries, and the restriction of resources necessarily prevents the launching of grandiose schemes with which alone the big man may be content to bother his head.

Mr. Pope Yeatman's Views.

Another of these papers dealt with "Factors in Mine Management that Lead to Loss and Waste," the author being Mr. Pope Yeatman, of New York. He recalls that the Committee on the Elimination of Waste in Industry, appointed by the Federated American Societies, in its report says that waste in industry is attributable to four causes:—

1. Low production, caused by faulty management, of materials, equipment and men.

2. Interrupted production caused by idle materials, idle plants and idle equipment.

3. Restricted production intentionally caused by owners, managers or labour.

4. Lost production caused by ill-health, physical defects and industrial accidents.

Questionnaires sent out by the committee showed that in the different industries examined the responsibility of management was from 50 to 80 per cent., and of labour from 9 to 28 per cent.—a result greatly at variance with calculations. But a little consideration will show that for many of the faults of labour the management should be indicted owing to its neglect to choose a suitable personnel in the first instance. Management, moreover, does not reside in a single personality, but covers the whole system of control from the highest to the lowest official, and any defect in the "make-up" of this organisation may lead to the most regrettable waste. Yet, if the management resolves itself into a committee, there will be a fatal propensity to dodge responsibility. This will lead to indecision and vacillation, and, following that, discouragement and waste of money.

Mr. Yeatman specially remarks on the waste that may result from a wrong decision as to the size of plant, and from the passion for unnecessary detail in plans and estimates. To sum up, the author concludes that the losses that may be traced to the board of directors or to the manager, or both, are mainly due to lack of an improper financing, excessive overhead charges, indecision in action, over-conservatism, unnecessary detail or lack of it, interference with management by directors, poor selection of method of mining, poor plant design, lack of proper touch with the business through poor cost-keeping and poor technical records, inefficient purchasing of supplies, poor salesmanship in disposing of produce or negotiating contracts, and last, but not least, losses due to lack of proper co-operation between directors and manager, and between manager and staff and employees, for he concludes "in the final analysis success in management is absolutely dependent on team work and the earnest, intelligent, and loyal efforts of all concerned, from directors to the lowliest employee."

Waste and Efficiency.

Another writer, Mr. W. R. Ingalls, draws a distinction between waste and inefficiency; "waste" he defines as the careless and profligate use of the materials that have come into our possession, together with the absorption of labour in doing obviously unnecessary things; "inefficiency" as the failure to accomplish in our industrial operations the best of which we are capable. Adopting this distinction he considers that the greatest inefficiency that exists in our economic affairs to-day is that which causes so many hundreds of thousands of men to be idle a good deal of the time. One cause of this has been held to be the consequence of what may be called business cycles—a theory to which he does not accede; on the contrary, he believes that the range between the zenith of industrial activity and the nadir of depression is comprised within a rather small percentage of the total number of workers.

The other cause of under-employment is the defective organisation or defective functioning of industries. Where these fluctuations are due to seasonal influences, the remedy offered is storage—a subject about which much has been heard in America during the past twelvemonth. But Mr. Ingalls believes that there is a much more insidious cause of short time, and that is over-capitalisation—not financial over-capitalisation so much as physical over-capitalisation. As an instance, he cites the fact that the bituminous coal mines of the United States can do twice what they are likely to be asked for. In 1920 there were 11,000 coal mines in the United States, controled by 7,000 operators, whereas in 1913 the total number of operators was only 5,776; the present capacity of the bituminous mines has been estimated at about 776 million tons, whereas in 1913 they produced 478 million tons. But every other industry in America, Mr. Ingalls declares, is in the same case, and the main cause has been the over-expansion due to the war.

Some Conclusions.

Mr. Ingalls' conclusions are extremely interesting. He regards both labour and capital as being hopelessly incapable of providing a remedy, and thinks the burden must rest with the management. His formula is as follows: "Miscalculations in industry will decrease along with increase in the transparency in industry, which tends towards the establishment of equilibrium." Transparency in industry he defines as merely the acquisition of knowledge about it, and thereby the ability to see through it and ahead. We must prepare for the future, and to do so we must have illuminating statistics of production and consumption, producing capacity, and all other factors, and such statistics must be promptly available.

The Crown Diamond Reconstruction.

The Crown Diamond Mine has entered upon a new and what promises to be a more profitable lease of life. The excellent developments of the mine in depth have encouraged the directors to reconstruct the company with the object of paying its debts, increasing and improving the plant, and generally putting the mine in the way of earning dividends. A full report of the chairman's speech at the annual meeting last week appears in this issue, and will be found to give a clear and detailed review of the position. The resolutions necessary to the passing of the reconstruction scheme were adopted at a special meeting, and the company is therefore in a position to take advantage of the reviving demand for diamonds. It can even now profitably dispose of its product without waiting for any general improvement in the market. The company, it should be noted, has not to share its profits with the Government like Transvaal diamond mines, an important factor when dividends come to be considered. The very encouraging results won recently from the different levels of the mine may be quoted. They are:—At the 160 feet level, 2,089 loads, yielding 14·7 carats per 100 loads; at the 440 feet level, 3,871 loads, yielding 15·3 carats per 100 loads; and at the 540 feet level, 1,089 loads, yielding 20·75 carats per 100 loads. Not only is the mine improving in depth in respect of recoveries per 100 loads, but also in the value and quality of the diamonds found. In order to obtain in the future the maximum returns at a minimum working cost, the technical advisers are of opinion that a plant of a greatly increased capacity and improved efficiency will have to be installed. Plans have accordingly been prepared for a complete remodelling of the existing equipment on new lines capable of handling a much greater output at a lesser cost. Instead of having to pay 4s. 6d. to 5s. per load for the treatment of ground, it is estimated that on the new basis the company will be able to produce at a cost of 2s. 6d. per load. Given cheaper production and the price even to-day obtainable for the company's diamonds, it should be in a position, with the improved yield from the mine, to show satisfactory profits and render the company again dividend-paying.

* * *

The late Mr. H. S. Meyer.

With deep regret we have to chronicle the death this week, which took place after a very brief illness, of Mr. Hans Soren Meyer. Mr. Meyer was one of the best-known and most highly-respected consulting mining engineers on the Rand, and the unexpected announcement of his death came with a sense of personal loss to the whole mining community. Apart from his high personal attainments, the late Mr. Meyer possessed a wide knowledge and understanding of men, a keen wit, and a store of sound common-sense. Mr. Meyer came of a distinguished Danish family, and was born in London, where his father was a high official in the Danish Embassy and an honoured friend of the reigning family of Denmark, which friendship was maintained in the person of Queen Alexandra up to the time of his death. He was a first-class Associate of the Royal School of Mines, where, being first on the list in open competition, he obtained the De la Beche medal for mining, in addition to the Government prize. Thereafter he was engaged in practical work as a miner on the Kongsburg Silver Mines, belong to the Norwegian Government, and obtained further practical experience on the coal mines in Wales. Later, on coming to South Africa, he first occupied himself on various properties, both underground and surface, thus obtaining first-hand knowledge of every department of mining practice on these fields. In 1902 he joined the technical staff of the Corner House, with which he was associated up to the time of his death. The funeral on Wednesday was attended by over 200 mourners, representative of the mining and general community. Wreaths were sent by all the leading people in the mining world, by the directors of the various mining companies, and by scientific and other public bodies.

DAVIS-MADE
HYGROMETERS

FOR USE IN MINES TO ASCERTAIN THE AMOUNT OF MOISTURE IN AIRWAYS.

Fitted with porcelain scales, tubes divided on the stems, strong hinged metal protecting case.

Special leaflets, illustrating and describing the many other good things which are manufactured by **John Davis & Son (Derby), Ltd.**, will be gladly sent on request.

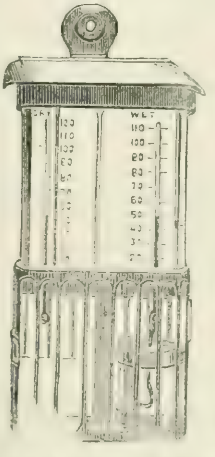
Sole South African Agents:

BARTLE & CO., LTD.,
LOVEDAY HOUSE. P O. Box 2466
Phone 3553. Wires: "FAGGOT."
JOHANNESBURG.

[illegible]

P.O. Box 444 .. .. KIMBERLEY
P.O. Box 1228 . DURBAN

DAVIS-MADE MEANS HIGHEST GRADE



The Week in the Sharemarket.

CHECK IN UPWARD MOVEMENT—MID-WEEK SETBACK—EXCELLENT JUNE RETURNS SUSTAIN CONFIDENCE.

[illegible] profit-taking and the undue restriction of banking facilities. All these features are assisted by the financial position of Germany which has caused anxiety for the past two years. This anxiety has been recently accentuated by the rapid and material fall in the value of the mark. The German outlook may seriously affect the position of Governments, but we cannot see how it will adversely affect the position of the individual who is a holder of our gold shares. At any time since the war, had an immediate settlement of the European Governments been called for, it is probable that they would all have been found to be insolvent, while the position of the majority of the working business public has improved. This fact is apparent in the enormous amount of speculation that has taken place in every market, except Kaffirs. At the moment of writing (Thursday) mid-day cables have just arrived quoting the Kaffir market "firmer." This would appear to bear us out in the foregoing remarks. The published profits for June are very satisfactory. With regard to working costs a general rise in this figure in view of development charges could have reasonably been anticipated, but we are pleased to see that our hint of a few weeks ago was not incorrect. Of 31 published returns, 15 companies show higher costs, while 16 show a decrease. In these early days of anti-revolution these figures must be looked upon as remarkably encouraging. Taking a view of the market position generally, we are inclined to look for better prices and more activity during the rest of the year, but phases of fluctuation such as we are passing through at the moment must be expected from time to time, and we would warn investors when these circumstances occur not to be frightened out of their good shares by alarmists who, like mushrooms, are created [illegible] a falling market.

	Fri. 30th.		Sat. 1st.		Mon. 3rd.		Tues. 4th.		Wed. 5th.		Thurs. 6th.	
Anglo-Amer. Corp.	21	7	22	10½	23	3	23	6	22	0	21	9*
[illegible]	7	0†	6	3*	7	0†	7	0†	6	9		
[illegible]			4	3*	4	[illegible]	4	6*	4	[illegible]	4	3*
[illegible]	50	[illegible]	50	[illegible]	51	0	51	3	51	6	51	6*
[illegible]	—		—		11	[illegible]						
[illegible]	0	4*	0	4*	0	4*	0	4*	0	4*	0	4*
[illegible]	2	[illegible]	2	[illegible]	2	[illegible]	2	[illegible]				
City and Suburban			2	2*					2	2*	2	2*
City Deep	39	6*			38	[illegible]	38	6	40	0†	47	6
[illegible]	22	[illegible]	21	4†					19	6†		
Con. Diamonds	16	6	17	4½	17	[illegible]	17	4½	16	9	16	3*

	Fri. 30th.		Sat. 1st.		Mon. 3rd.		Tues. 4th.		Wed. 5th.		Thurs. 6th.	
Con. Langlaagte			13	6*								
Con. Main Reef	11	0*	11	3	11	6	11	9½	11	0	10	9*
Con. Mines Selection			13	6*	15	9*	14	0†	15	0	15	0*
[illegible]	0	9*										
[illegible] Synd.	4	[illegible]	5	0	5	0	5	0	4	10½	4	6*
Crown Diamonds	6	0	5	10*	6	3	6	3	6	0*	—	
Crown Mines	41	6*	42	6*	43	0			41	0*	42	9
Daggafontein	2	10*	3	0	3	0*	3	2	3	4	3	0*
East Rand Coal	1	6*	1	6*	1	6*	1	6*	1	6*	—	
East Rand Deep	0	9*	0	9*	0	9*	0	9*	0	9*	0	10†
East Rand Mining	11	6*									11	6†
East Rand Prop.	8	0	8	10½	8	10½	8	7*	8	3*	8	0*
Eastern Gold			0	7†	0	7†			0	6*		
Frank Smith Diam.	3	9*	4	0	4	0	3	9*	3	2*	3	10*
Geduld Props.	65	0	65	6	65	0*	66	9	65	9	—	
[illegible] Deeps			4	6*								
Glynn's Lydenburg							16	0†				
Govt. Areas	101	0	100	0	100	6	100	3	98	9	99	6†
Hume Pipes							15	0†				
Knight Central	3	9	3	9*	4	0	4	10	4	6*	4	6*
Lace Prop.	8	1*	9	3	9	0*	10	0	9	0*	8	6*
Leeuwpoort Tins	5	0*	5	0*	5	3	5	0*	5	3	5	0*
Lydenburg Farms	3	0	3	9*	3	9*	3	10*	3	10*	4	6†
Meyer and Charlton	80	0†			75	0†						
Middelvlei Est.			2	0†	1	3*	1	3*				
Modder B's	34	0	35	6*	35	9	35	6	34	0	34	0
Modder Deeps	47	9	45	6	45	9	45	9†	44	0	43	6
Modder Easts	7	9	8	0	8	1½	8	1	8	1	8	1
Natal Nav. Coll.	31	6†	31	0†	31	6†	29	0	31	0†	31	0†
National Banks	£11		£11		£10⅞		£11*		£11*		£11¼	
New Eland Diam.	30	0*	32	0*	34	0*	33	0*	31	6*	34	0*
New Era Cons.	6	0*	6	0*	6	7*	6	9*	6	9*	7	0
New Geduld Deeps	1	6*	1	6*			1	6*	1	6*	1	7½
New Kleins	6	3	6	6	6	9	7	9	7	0*	7	1*
New Modders	79	3*	80	0	80	0	81	0	78	0	78	0
New Primrose	4	9*	5	6†	4	9*	5	6†	4	6*	4	6*
New Unifieds	3	9*	4	9†	3	9*	3	6*	3	6*	4	9†
New State Areas	34	3	34	3*	34	6	34	0	34	0	33	0
Nigels	5	0*	5	6*	5	6*	5	0*	5	0*		
Nourse Mines	16	3*	16	4*	17	0	17	7½	16	3	16	3
Pretoria Cements	43	6*	43	0*	44	0*	44	6	43	9*	44	0*
Rand Collieries	0	9*	0	9*	—		—		0	9*	1	0*
Rand Nucleus			1	1*			1	1*	1	1*	1	1*
Rand. Central	12	0*	12	6†	11	6	12	0†	12	3†		
Rand. Estates	19	0	19	3	19	0	19	0	18	4½	18	4½
Rouxville Diamonds	1	3*	—		1	8†	1	4*	1	4*	—	
Roberts Victors	8	6*	9	0†	9	0†	9	0†	8	6	8	6*
Rooibergs	3	1*	3	4†			3	3*	3	1	3	0*
Ryan Nigels	3	0*	4	0†	3	0*	3	6	3	0*	—	
Rose Deeps	—		12	6	—		12	0	—		—	
Simmer and Jacks	3	5	4	0	4	4½	4	4	4	1	4	2
S.A. Breweries	—		—		—		26	0*	—		—	
S.A. Lands			4	5†	4	4	4	4	4	6†	4	2*
Springs Mines	46	3	47	0	48	0	48	6	45	9	45	9
Sub Nigels	13	9*	13	0	13	0	13	0	13	3	12	6*
Swaziland Tins	5	0*			5	0*	5	0*	5	0*	5	0*
S.A. Alkali	17	6	17	3	17	6	17	3	17	3	17	3
S.A. Townships	9	9	10	3	10	0*	10	0*	9	9*	9	3*
Trans. G.M. Estates	11	3*	12	0*	12	0*	12	0	—		—	
Transvaal Silvers			13	3*	13	6*	14	0	—		13	6
Tudors	0	8†	0	8†			0	9*			—	
Van Dyk	1	0	1	0†	1	0	0	11	1	0†	1	0†
Van Ryn Deeps	73	0	72	6*	73	0	74	6*	73	6	73	0†
Village Deeps	11	9	12	0*	12	6*	12	9	11	3	11	0*
West Springs	11	6	11	10½	13	3	13	1½	12	0	12	10½
Welgedacht	—		—		11	6*	—		11	0*	—	
West Rand Cons.	5	[illegible]	5	1*	5	9	5	7½	5	3*	5	3*
West. Rand Estates	4	[illegible]	3	9*	4	0*			4	0*	4	3†
Witbank Colls.	40	0†	40	0†	39	0	40	0†	39	9†	38	9*
Witwatersrands	—		12	6*	13	0	13	0*	13	0	—	
Wit. Deeps	10	6*	11	6*	11	9	11	9	11	3*	11	0*
Zaaiplaats Tins	2	0	2	0	1	9*			2	0†	—	
Union 5 per cent.	£101¾*		£101⅞		£101¾		£101⅞		£101		£101¼*	

* Buyers † Sellers. a. Odd lots. b. Ex London.

MINES DEPT. EXAMS.
CERTIFICATES AWARDED INSTITUTE.
MANAGERS' EXAMS., September, 1921, January—May, 1922.
We obtained 11 out of a total 16 certificates awarded in South Africa.
Metal
Ours 11
Rest of S.A. 5
Total for S.A. 16
OVERSEERS' CERTIFICATES.
During August, 1921—May, 1922, we secured ALL the Overseers Certificates issued in South Africa, except 3 metal and 3 coal. During the first 6 months of 1922, we secured ALL the metal certificates.
TUITION (Metal or Coal) by class, correspondence or privately
Mining Institute (Prof. Yates),
St. James' Mansions, Eloff St. Johannesburg

BENGUELLA RAILWAY.

Tanganyika Concessions announce that an order has been placed for a further 50 kilometres of permanent way material for the Benguella Railway, and arrangements are being made to ship this material early next month.

Letters to the Editor.

OIL OUTLOOK—PROFESSOR SHAND'S VIEWS.

To the Editor, *S.A. Mining and Engineering Journal*

Sir,—In your issue of June 24, you give the place of honour to an unsigned article entitled "Our Improving Prospects of Finding Oil." Commencing with some interesting particulars of the drilling operations on Elandspoort, where the total yield of oil seems to have been less than 100 gallons, your correspondent proceeds to "some general considerations" which lead him to the assertion that "there is no reason why oil should not be found in South Africa in large quantities."

It is a matter of some importance that the "general considerations" which are held to justify such a weighty pronouncement should be both relevant and adequate, but those mentioned by your correspondent are neither the one nor the other.

That oil is got in America south of the Equator has no bearing whatever on the question of its presence or absence in South Africa, unless the stratigraphy and tectonics of the two areas are compared as well. The results of recent drilling in Great Britain are misunderstood by your correspondent, as by many other people. The facts are, that these test wells were only undertaken in consequence of the pressure of war conditions; geological opinion was generally adverse, or, as Mr. Cunningham-Craig says, a scientific rather than a commercial success was predicted. The result has been in full accordance with this opinion, for only two of all the wells drilled got a trickle of oil; one of them at the rate of some 20 barrels a week, the other much less.

If South African prospects of finding oil are to be estimated by such "general considerations" as these, then one must conclude that they are poor indeed. There are in fact *many* reasons "why oil should not be found in South Africa in large quantities," and if your correspondent would take the trouble to acquaint himself with them he would be less likely to make such dangerously optimistic forecasts in the public Press.—Yours faithfully,

S. J. SHAND.

University of Stellenbosch, June 29.

TO HELP THE "SMALL MAN."

To the Editor, *S.A. Mining and Engineering Journal.*

Sir,—Being an observant mechanic of 27 years in this country, I have noticed in travelling around the deplorable way in which 5 and 10 stamp propositions are run. In some cases not having a qualified mechanic and in others an incompetent manager, stems are broken in a battery and allowed to remain, with the result short tonnage and brought down to 10 to 20 days' run in a month. To my idea batteries should be a crushing power of the past, and a series of crushers should take their place. The repairs on same are nil, once in six months run the bearings up. By using crushers you get a direct crack and the rock is through. There are two crushers in the market, one to bring the rock down to 2 in. cubes, the other ¼ in. (Hadfield's). So far so good. It is now up to large manufacturing firms to bring it to dust, cyaniding to follow or sliming. The point I am aiming at is the small man with a limited capacity who wants two to five tons crushed a day from rich leaders. There are no such crushers built for this class of man. If there were, with a small crude oil engine, oil 1s. 2d. a gallon, centrifugal pump, etc., he would then be able to crush same, save money, and so build up for a larger plant and mine. In talking to old prospectors and would-be mine owners the cry is we cannot afford the present-day equipment, but something small to cart around easily. I also contend that to work a small mine properly the men to do it are a fitter-amalgamator, cyanide and assayer miner and timberman (no directors and consulting engineers). Three men with six men's knowledge. There are small properties all over the country waiting for such a start to give hundreds of skilled men an opportunity of opening out. Machinery for the large mines and nothing for the small man to become a mine owner, without drawing on the public and squandering their money and his own. A feeler put out to the above men would surprise you.—Yours faithfully,

C. S. ALEXANDER.

3 Park Buildings, Wolmarans Street, Joubert Park.

DUMPING AND THE RUBBER TRADE.

To the Editor, *S.A. Mining and Engineering Journal.*

Sir,—With reference to the report of the Parliamentary debate of last Monday, I beg to take exception to some of the statements that have been made, which, to my mind, are "ex parte" statements and not consistent with facts, and I cannot do otherwise than feel that the information given to the Government by an interested party is misleading.

Having several years' experience in the rubber hose trade, importing American and Canadian products, I claim to be in a position to know exactly the condition of this local market, both from an importing and a selling point. In the first place Mr. Burton accuses an American firm of dumping hose into this market, but has he proved it? He just makes a bald statement and leaves it at that.

At the present time there are about eight firms importing hose for the mining trade, and of these six handle either American or Canadian products. All of them import on a liberal scale, comparative to the requirements of the local

OSBORN'S

BEST
TOUGHENED CAST STEEL
WHEELS AND AXLES,
LOOSE TRUCK WHEELS,
"U" PULLEYS,
"DALY" PATENT TAPPETS,
AND
CASTINGS OF ALL DESCRIPTIONS.

SAMUEL OSBORN
(S.A.), LIMITED.
P.O. Box 3162 'Phone 4673
JOHANNESBURG.
WORKS: CLYDE STEEL WORKS, SHEFFIELD

[illegible] I am [illegible] that not one of them [illegible]. According to Mr. Burton's statement and the leading article there is only one American house involved in the hose business, and they are making [illegible].

[illegible] the most unreliable statement of the lot and can only be termed [illegible] American house [illegible] throttled the local industry; it will then be able to charge what it likes and recoup their losses. This is "piffle," as if this was attempted by one what would the other seven competitors be doing?

Competition is keen enough now, as you could easily find out by referring to any buyer for the mining groups, and if this boosting of price was to take place the importer would soon find a "draught."

Another statement made is that the American house had half inch armoured hose invoiced out to them at 26s. 4d. f.o.b., and the landed cost was 40s. 10d. at Johannesburg; this means that the hose cost approximately 50 per cent. [illegible] landed at Johannesburg.

I do not know where Mr. Burton got his figures from, but I can assure him that if our hose cost us 50 per cent. to land we would go out of the hose business right away and so would our competitors.

[illegible] invoiced out at 26s. 4d. f.o.b., while the home consumption price was [illegible] figures appear to be ridiculous and are very unlikely.

The prices of all overseas goods have dropped very considerably during the last six months, and because a firm was selling at the end of 1921 half inch hose at 62s. 6d., which were probably purchases at high prices, should they be compelled to sell at the same price now that the factory [illegible] reduced and the rate of exchange has come down in their favour?

If this is done, then it is a case of profiteering; but if the Government puts on a ridiculous customs tax to bring the price up to what it was, then it is acting like a brigand with a pistol at our heads, and we have no alternative but to pass the costs on to the consumer or else go out of business through the shortsightedness of the powers that be.

Do not think I am against local production, or if necessary a protective tariff within reason, but the feature, and a bad feature at that, is the clause which the Government has passed in committee according to my interpretation giving the customs department a free hand to act in an arbitrary manner, and to assess the value at any price they think fit, which would be apparently the valuation on selling price of the local product.

In reviewing the entry of the local product into this market the local manufacturers fixed their own selling prices; and they made a point of fixing their prices considerably under the imported article. All the hose importers were selling at high prices at that time, due to buying at the time when factory prices were higher; now prices have come down all over the world it is only to be expected that prices should come down here, and to attempt to bolster up a local industry (which at the present time cannot supply the market) at the expense of the consumer is a wrong attitude.

We have had enough cries of "lower working costs" on the mines, but apparently the Government wishes to increase the costs of working on the mines, as whatever extra duty has to be paid must be passed on to the mining industry, which means increased costs per machine shift.

Mr. Burton is greatly concerned about employment in this local industry, but perhaps he is not aware that the eight firms mentioned employ more white men in South Africa than the local industry, and it is certain that the Government receives more from the importers in the way of taxes, railway rates, postage, wires, etc., than they can [illegible] from the local producers.

Another serious statement by Mr. Burton is that "the local manufacturers during the war kept the Railway Administration supplied with vacuum brakes and coach gear, almost unprocurable elsewhere."

Now, for one thing, the factory was not working during the war, and another that on every tender asked for by the Railway Administration for this class of goods, they received quotes for American or British goods, and deliveries guaranteed at prices much below the local figure. There are plenty of firms [illegible] and have records of their figures, which can amply prove this statement.

The foregoing should give some idea of the other side of the case, and I hope someone will take the matter further.

As I do not wish for a free advertisement of my firm, I am signing this letter— TRADER.

Base Metal Prices.

Hopes recently prevalent as to a demand for the leading base metals for reparation purposes having been temporarily dashed to the ground by the decision of the Bankers' Conference, the tone on the Metal Exchange in mail week was for the most part depressed. Standard copper gave way 12s. 6d. for cash, 15s. three months, electrolytic 5s. Tin declined 25s. for spot, 23s. 9d. for future delivery; lead 2s. 6d. and 5s. respectively. Spelter was quiet but firm. Messrs. Lewis Lazarus and Sons report as follows under date 12th June:—Copper—American reports do not tell of any change in the market for electrolytic, producers holding firmly for 14 cents f.o.b. Atlantic ports, but here and on the Continent the tendency is towards ease, reflecting the less settled political outlook. Standard copper on the London market to-day showed some weakness, and values receded 12s. 6d. to 15s. per ton. 1,100 tons were sold at £61 12s. 6d. to £61 6s. 3d. cash and June, £61 15s. and £61 12s. 6d. August, £62 5s. to £61 12s. 6d. and £61 15s. three months. Tin—Trading in America at the close of the week was very restricted. Indeed, on Saturday the market was described as idle. In the East on Saturday 150 tons were sold at £157 5s. To-day, the price cabled was 10s. lower, but no business was reported. Here, Standard tin has ruled easier in tone, moving within narrow limits, and closing lower by 25s. per ton. Lead—A quiet market, lower by 2s. 6d. for June, and by 5s. for September shipment. 400 tons were sold at £24 15s. June, £24 7s. 6d. and £24 5s. July, £23 15s. and £23 12s. 6d. September, £23 10s. October. Official quotation, £24 15s. to £23 12s. 6d.

ROYAL SCHOOL OF MINES FRECHEVILLE RESEARCH FELLOWSHIPS.

The Imperial College of Science and Technology, South Kensington, London, S.W. 7, with which the Royal School of Mines is incorporated, is offering two Research Fellowships of £[illegible] a year each, tenable for one year and possibly renewable for a second year, to aid in carrying out [illegible] connected with Mining, Mining Geology, Metallurgy [illegible], which in the opinion of the Selection Committee [illegible] promise.

[illegible] of the Royal School of Mines [illegible] some practical experience, if resident in South Africa [illegible] writing to the Secretary of the Chemical, Metallurgical and Mining Society of South Africa, Johannesburg (from whom further particulars may be obtained), before 1st September, 1922, giving the nature of the proposed investigation, qualifications for the work, and references.

It is [illegible] the Committee will make the awards by the end of November, so that the Fellowships and work may begin on 1st January, 1923. Holders will be expected to devote their whole time to the work, which may be [illegible] at the Imperial College, or in special circumstances [illegible] of the Committee.

Waste Rock in Ore Milled

By W. A. Caldecott, D.Sc.

From the mining and sorting aspect the subject of waste rock has been discussed in past years by various members of the Chemical, Metallurgical and Mining Society, and notably among others by the late Wager Bradford. In this short note, however, I merely propose to submit a few observations upon the effect waste rock produces in practice upon the capital and operating cost of ore treatment plant, and upon the methods employed therein. In considering this subject it is obviously of the first importance to be able to readily determine with approximate accuracy the percentage of waste rock in the mill ore feed or screen sample. Apparently the simplest method of ascertaining this is to determine the relative amounts of some common constituent, which exsts in different proportions in the clean reef, waste and current screen sample, and which by a simple calculation affords the required figures. For this purpose in the first instance Messrs. Jolly and Guthrie kindly carried out for me a number of determinations of the amounts of silica in the above materials, but the high silica content of quartzite waste precluded a satisfactory differentiation between quartzite and clean reef. Alumina was considered but not proceeded with, as being inapplicable to quartzite and involving a somewhat laborious analysis. Mr. A. McA. Johnston made relative sulphur determinations, from which the pyrite could be calculated, and this proved more satisfactory, but finally gold was adopted as the basic factor on account of much assay data being regularly available on every mine as to reef, waste and screen values, without any additional analytical operations. The formulæ, based on assay values, for calculating the relative amounts of clean reef and clean waste in the ore miled are derived as follows:—

Since 100 × A. V. Screen Sample =
Percentage of Reef × A. V. Reef) + (Percentage of Waste × A. V. Waste)

Then,

$$\text{(a) Percentage of Reef} = \frac{100\ (\text{A. V. Screen} - \text{A. V. Waste})}{\text{A. V. Reef} - \text{A. V. Waste.}}$$

$$\text{(b) Percentage of Waste} = \frac{100\ (\text{A. V. Reef} - \text{A. V. Screen})}{\text{A. V. Reef} - \text{A. V. Waste.}}$$

$$\text{(c) Tons of waste milled per ton of reef} \quad \frac{\text{A. V. Reef} = \text{A. V. Screen}}{\text{A. V. Screen} - \text{A. V. Waste}}$$

Examples.

$$\text{(a) Percentage of Reef} \quad \frac{100\ (28\ \text{dwt.} - 10\ \text{dwt.})}{28\ \text{dwt.} - 1\ \text{dwt.}} = 33{\cdot}3\%$$

$$\text{(b) Percentage of Waste} = \frac{100\ (10\ \text{dwt.} - 1\ \text{dwt.})}{28\ \text{dwt} - 1\ \text{dwt}} = 66{\cdot}7\%$$

$$\text{(c) Tons of waste milled per ton of reef} = \frac{28\ \text{dwt.} - 10\ \text{dwt.}}{10\ \text{dwt.} - 1\ \text{dwt.}} = 2\ \text{tons.}$$

It does not appear usual for the published reports of gold mining companies to state the average value of the clean reef in ore reserves, except for development records, but merely to give the average value over a given stoping width or reef channel. Hence an assumed illustration has been given as above, in which case two-thirds of the total tonnage mined would be a source of loss rather than of profit through the cost of underground and surface operations, besides involving much capital expenditure on plant and equipment. It is, of course, obvious that the ideal of mining and milling clean reef only is impracticable, and the degree of approach to this ideal is mainly in the hands of the mining man, who can best determine whether any modifications of present mining practice towards the desired end is possible. Surface sorting is not practised upon some half of the mixture of reef and waste hoisted owing to its passing the grizzlies as "fines," so that any radical improvement appears to depend upon the application of mining methods which would reduce the percentage of waste rock mined and mixed with the reef, and thus facilitate the most efficient and profitable ore treatment. Reverting to the specific example given above, and assuming 95 per cent. extraction for the 10 dwt. mill ore feed, the total residue after cyaniding would be 0·5 dwt. per ton. As, however, it is assumed that two-thirds of the total tonnage milled is 1 dwt. waste, the residue from the clean reef would be about 1·3 dwt., which may be considered to be considerably above the economic limit of extraction. Assuming that the gold in the reef were sufficiently exposed by finer crushing to yield a residue of half the above amount, or 0·65 dwt. per ton, the net result would be that about 2s. 9d. worth more gold at mint par per ton of reef would be recovered. When the waste is largely slate as on the Far East Rand, the readiness with which it is crushed by stamps and tube mills produces a marked effect on stamp and tube mill duties, and is liable to obscure the behaviour of the rich banket reef proper, besides in some cases overloading the ore treatment plant to the detriment of the adequate treatment of the really valuable ore. Apart from its effect on the economic limit of crushing, the most favourable condition of crushing waste unavoidably included in the ore hoisted is when surplus crushing and treatment plant already exists, so that dealing with the whole would yield some gold and save sorting cost. It is obvious from the equation above that the screen value of the ore milled, including tube mill pebbles, is as much affected by the percentage of waste included in the screen sample as by the gold contents of the reef mined. The usual basis of comparing working costs per ton of ore crushed is an imperfect guide to maximum profit, as it does not reflect unfavourably any excess of waste rock milled, especially with rich reefs A basis such as working costs per ton of actual reef crushed might be preferable, as at present it is possible that a company's total profit may be greater with higher working costs per ton crushed on a lesser ore tonnage of higher value, than with lower costs per ton on lower grade mill ore feed.

*Transactions of the C. M. & M. Society.

NEW KLEINFONTEIN.

Appended are details of the operations on this company's property for the month of June:—Stamps, 200; days, 25; tube mills, 4; tons milled, 42,000; output, 11,547 fine oz.; value (less cost of realisation), £52,399; working costs, £48,096; working costs per ton (excluding development), £1 1s. 8d.; development to working costs per ton, 1s. 3d.; total working costs per ton, £1 2s. 11d.; profit, £4,303; capital expenditure, nil. The revenue derived from gold for the month is calculated at the rate of £4 12s. 6d. per fine oz., after allowing for realisation charges.

GLYNN'S LYDENBURG.

The following are the particulars of the output for the month of June, 1922, in respect of the above company:—Tons crushed 4,244, yielding 1,447 fine ounces; estimated value of month's output, £6,488; estimated profit for month £536.

Note.—The above figures are exclusive of expenditure for the month upon shaft sinking, special development and capital expenditure amounting to £1,114. The gold output for the month is valued at £4 10s. 6d. per fine ounce net, after allowing for exchange and realisation charges.

Box 3807. **Tel. 5892.**

WRIGHT'S ROPES

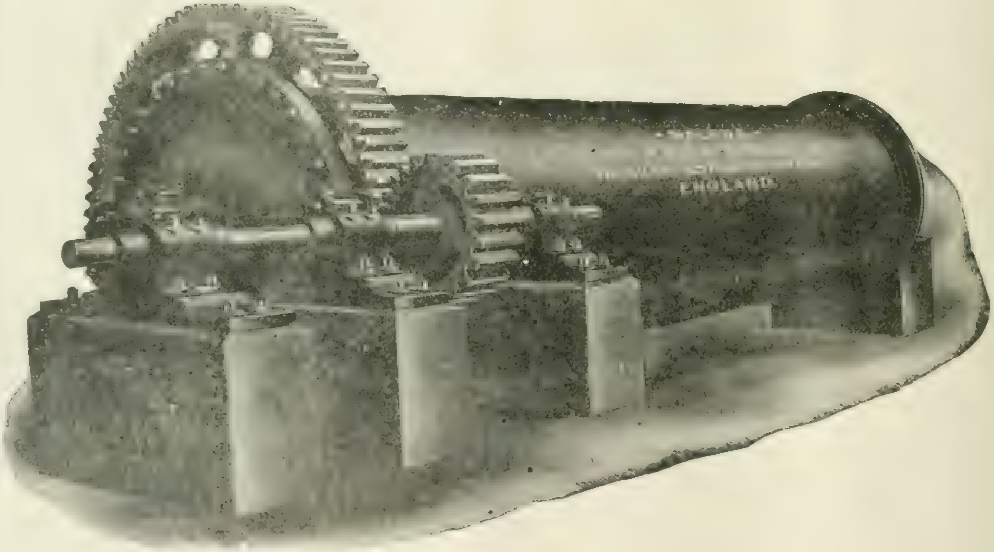
H. ALERS HANKEY - - - Sole Agent.

HEAD, WRIGHTSON & CO., LTD.

MANUFACTURERS OF:

MINING MACHINERY COLLIERY PLANT
BLAST FURNACE PLANT
AND ALL CLASSES OF
STRUCTURAL STEELWORK

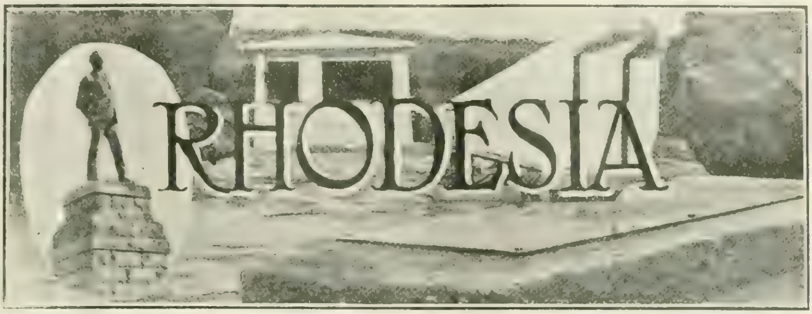
"NISSEN" STAMPS, TUBE MILLS, GRINDING PANS, AGITATORS, FILTERS, Etc., Etc.



Send for Descriptive Catalogues, Prices, etc.

HEAD, WRIGHTSON & CO. (SOUTH AFRICA), LTD.,

Johannesburg Office: 64-66, Standard Bank Chambers,
COMMISSIONER STREET
OR P.O. BOX 1034.



LONELY REEF GOLD MINING COMPANY.

The Lonely Reef is one of the few really big gold mining successes in Rhodesia. It has yielded to date £2,466,572 worth of gold from 597,706 tons of ore milled, and has paid 335 per cent. in dividends to its shareholders. In his review of the past year's operations Mr. Rowsell stated at the recent meeting that the total to the credit of the appropriation account was £202,449, as against £236,728 last year, and two dividends had been paid, amounting to 30 per cent., as compared with 50 per cent. in the previous year. The financial position of the company is quite satisfactory. An interim dividend of 15 per cent. on account of the current year will be paid on July 14 next, and it is hoped that the final dividend will be on a higher scale, so that the total distribution for the year should be larger than that for 1921. Referring to the recently-installed gas producer plant, the chairman said that the immediate results showed, not only that it would solve the great difficulty which the gradual exhaustion of the wood supplies was causing, but it would reduce the actual costs of supplying the power for the Lonely plant by upwards of £3,000 per month. The ore reserves at December 31, 1921, were estimated at 204,294 tons, of an average value of 18·1 dwt., as against 202,845 tons of an average value of 20·8 dwt. in 1920. The figures of progress during the year indicate very clearly that the mine is still in an excellent position, and that the shareholders may look forward to a long period of good results.

* * *

PLANET-ARCTURUS GOLD MINES.

The report for 1921 states that lessees treated 65,120 tons of ore, which have yielded 29,911 oz. fine gold of realised value, including premiums, of £157,334, less working costs, excluding development redemption (averaging 34s. 7½d. per ton) £112,681, leaving £44,652, less expenditure by lessees on development and stores (part of which should benefit current financial year), interest, etc., £33,918, leaving net surplus of £10,734, which has been applied in reduction of lessees' expenditure recoverable under their lease, leaving balance due at 31st December, 1921, of £148,923, including accrued interest. Work performed has disclosed no appreciable addition to tonnage of payable ore. Ore reserves which at 31st December, 1920, were estimated at 281,174 tons, of average value of 11·9 dwt. were re-estimated at end of May, 1921, and at 31st December, 1921, were computed at 98,920 tons, averaging 13·3 dwt. per ton, in addition to 52,170 tons of low grade ore of an average value of 7·9 dwt., which it is hoped under improved conditions to treat later.

* * *

BULAWAYO WATERWORKS.

The profit of Bulawayo Waterworks Company for 1921 was £9,196. After providing for income tax and corporation tax and writing off greater proportion of costs of arbitration with Bulawayo Municipality, the net profit is £1,628, plus balance brought forward, making £4,003. Towards the end of last year Bulawayo Municipality called upon the company to submit certain points under the electric concession to arbitration for decision. The result was that the company is called upon to make sundry alterations to plant, and to instal new system for supply of power. A slightly reduced tariff for sale of electric light was also fixed for three years from 1st February last. This will entail considerable capital expenditure, and arrangements have been made for the issue of £25,000 second debenture stock, carrying interest at 8 per cent. per annum. This steok will shortly be offered to present debenture stockholders and to the shareholders.

* * *

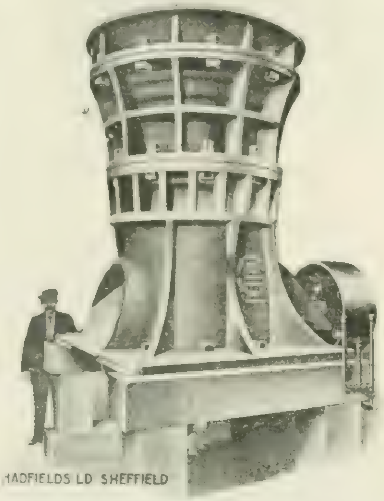
RHODESIA GOLD MINING AND INVESTMENT CO.

Mr. C. F. Rowsell (the chairman) presided at the twelfth ordinary general meeting of the Rhodesia Gold Mining and Investment Co., Ltd., held in London. In moving the adoption of the report and accounts, he said that the balance sheet this year differed very much from that of the previous year, as it gave effect to the reduction in the capital of 300,000 shares of £1 each to 300,000 of 10s. each. In the year under review they had received in respect of profit on shares sold, interest and dividends, revenue from properties, and sundry receipts, £20,159; last year they had received from interest and dividends, revenue from properties, and sundry receipts, £24,195. The expenses of administration were £2,459 this year, as against £2,589 in the previous year. The result of the year's working was a profit of £11,902. The value of the assets, excluding properties, plant, and buildings, amounted to £138,767, representing 9s. 3d. per share on the capital. The position was therefore very liquid, and he thought they were fully justified in the declaration of a dividend of 9d. per share, free of income tax. They held several blocks of claims, the most important being the Huntsman Mine, where they had milled to date 13,126 tons, which had been sold for £44,988. Up to December 31 that mine had shown a profit of over £10,000, and since that date a further profit of over £1,748, after charging all costs of development, and the present developments were encouraging. They hoped to be able to continue paying dividends of at least the same rate as the present one. They still held 18,851 shares in the Lonely Reef Gold Mining Co., Ltd., which continued on its prosperous career. That company had paid dividends last year amounting to 30 per cent., had already declared a dividend for the current year of fifteen per cent., and he hoped it would pay a larger dividend when the accounts were finally closed. The latest news received by cable was to the effect that prospects at the bottom of the Huntsman Mine were better than they had been in the previous year, and that there was a great increase in prospecting in Rhodesia, which might lead to important discoveries. The report and accounts were unanimously adopted.

TRADE HECLON MARK

ROCK AND ORE BREAKER

HADFIELD & JACK'S PATENT



HADFIELDS LTD.

Works area over 200 acres

East Hecla and Hecla Works, SHEFFIELD, ENGLAND

Workmen employed over 15,000

Head Office S.A., 36-37 Cullinan Bldgs, Johannesburg

Bulawayo Agents, Whiteford & Jackson, 17-18, Agency Chmbs

Salisbury Agents, F. [illegible] & Co., Angwa Street

Natal Agents, T. Barlow & Sons (S.A.) Ltd, Smith St., Durban

MAKERS OF THE BEST KINDS OF

Stone Breaking and Ore Crushing Machinery

including GYRATORY, JAW & DISC CRUSHERS

Renewals and Wearing Parts supplied for every known make of Machine

MINING REQUISITES

of every description.

SPECIAL FORGED STEEL BALLS FOR BALL AND TUBE MILLS, SHOES, DIES, GRIZZLEY BARS, CRUSHING ROLLS, JAW FACES, CONES, CONCAVES, ROLLERS AND FRAMES, PULLEYS, WHEELS AND AXLES, ETC.

ERA

Trade Mark.

Sole Makers of Hadfield's Patent

MANGANESE STEEL

THE SUPREME MATERIAL

for the Wearing Parts of Stone Breaking and Ore Crushing Machinery, Railway and Tramway Track-work, &c.

BELL'S UNITED ASBESTOS (Lond.)

AFRICAN AGENCY, LIMITED,

Telephone No. 345, Central, **24-26, CHORLTON CHAMBERS, HARRISON ST., JOHANNESBURG.** P.O. Box 2642.

SOLE AGENTS IN SOUTH AFRICA FOR

BELL'S UNITED ASBESTOS CO., LTD., LONDON.

(OLDEST ASBESTOS MANUFACTURERS IN THE WORLD).

VIEW OF GENERAL ABESTOS WORKS, HAREFIELD, MIDDLESEX.

"GLADIATOR" ASBESTOS CEMENT BUILDING MATERIALS.

Over 170 million square feet "Gladiator" Building Material supplied the British Government during the War for Army Hutments, Hospitals, Aerodromes, Munition Factories and the like.—Enquiries invited.

TRADE AND INDUSTRIES SECTION.

Week in the Mining Material and Engineering Trades.

BETTER BUSINESS CONDITIONS ANTICIPATED—IRON AND STEEL — TIMBER AND BUILDING MATERIALS—ELECTRICAL GOODS—UNION'S IMPORTS AND EXPORTS FOR JUNE—CONDITIONS IN GERMANY—METAL MARKET.

General.

The turn of the month and of the financial year sees mining material business restricted and generally of a quiet character. This quietness is due, it is thought, to the mines not having completed their stock lists and being unable for the moment to enter into fresh commitments. However, as soon as the financial year's worries have been adjusted the commercial community is looking forward to steadily improving business conditions. An influential merchant this week was of the opinion that in view of the fact that everyone is now setting his back into things an improvement in commercial affairs is only a matter of time. We are all confident, he said, of better times, and he stressed the fact that if labour would only realise that everything depends upon industries being kept alive and vivified all would be well. This, he said, and with right, was our only salvation; labour must realise that its *raison d'être* was the conditions and flourishing condition of industry—mining and industrial. That was the crux of the position. As long as labour paid its way and allowed industry to prosper, permitting money to be introduced into the country for present and new industries, things would be all right. This influential merchant stated that he had received a cable from his correspondents this week that prices for steel plates and iron and steel goods generally were of a firming tendency, and that prices were on the increase, which confirmed, he said, the feeling that a lot of goods, particularly steel plates, were at the moment being sold here below replacement value. A commercial magnate this week said that things at the moment were undoubtedly slow, but there was no getting away from the fact that we had turned the corner of our recent troubles, that a new page had been turned in Johannesburg commercial business, presaging, he thought, better conditions in a future not very remote. The improvement looked for, he said, was bound to take time to eventuate, but he confidently looked to about September as the time when we might expect a return to normal. Everybody, he stated, despite present lagging conditions, had an innate feeling that we were on the eve of better times. The commercial community, he added, was pleased with the candid and explicit statement of the National Bank, which had only confirmed the general opinion that, in spite of certain weaknesses revealed in recent months, the policy of the institution was a sound one and the confession by the bank of its recent losses in very trying times a pledge for sound business methods in future. This, combined with the sound financial position of the bank, is very reassuring to the general public, as is evidenced by the present firmness of National Bank shares—a very hopeful feature in the position is that signs are increasing that the banks and other financial institutions are more ready than hitherto to foster and facilitate genuine business concerns. Inquiries from the Rhodesian side, said a big commercial man this week, are much better in respect of mining material lines than they have been for months, which points, of course, to increased general business very shortly. Prices remain locally much about the same, with the exception of Stillson wrenches, hammer handles and some sizes of steel plates, which are scarce and enhanced in value. In short, the general opinion of the commercial community is that with the monthly additions to the mines' complement of labour—which is proceeding beyond most people's expectations—we should see a return to normal business conditions within, say, six months; others of a more optimistic view are inclined to pin their faith to about September as a month which is likely to give the looked for impetus. The continued drop of the German mark (now nearly 2,000 to the £—in pre-war days about 20·45) causes thoughtful merchants much anxiety as to Europe's financial stabilisation; nor is the position in Ireland calculated to restore that confidence in the return to normal conditions which we have been looking for for nearly four years.

Iron and Steel.

Business has been quiet this week following on the close of the financial year. The mines have of necessity been paring as closely as possible and holding back their orders until stocktaking operations have been completed. Although quiet indications are apparent that business will move forward shortly.

Latest quotations.—Dunswart iron, 18s. to 22s. per 100 lb. basis price: Union Steel Corporation, Ltd., 19s. to 22s. 6d.; imported iron and steel, flats, rounds and squares, from 25s. 6d. to 35s.: channels and joists, 25s. to 28s.; imported angles, 25s. to 28s; smaller sizes, 22s. 6d. to 31s. 6d; tee iron, 32s.; shafting, ⅜ in. down to 3-16 in., 7½d. to 9d lb.; ⅝ to 1½ in., 6½d.; 1¾ in. to 6 in., 4¾d.; steel plates, 1-16, ⅛, 3-16, 21s. 6d. to 23s. 6d.; 10 x 5 and larger, 25s.; ¼ to ¾, 21s.; spring steel, 7½d. to 8½d. lb.; bolts and nuts, hexagon, round, ⅜, 8½d. to 9¼d. lb.; ½ in., ⅝ and ¾, 40s. to 45s. per 100 lb.; hexagon nuts, ⅜, 8½d.; ½ in., ⅝ and ¾, 7½d.; fish plates, bolts and nuts, ⅜ in., 8d. lb.; ½ in., 6d.; ⅝ in., 5½d.; ¾ in., 5d.; dog spikes, 35s. per 100 lb.; rivets, ¼ in., 11d.; ⅜ in., 9d.; ½ in. and ⅝ in., 37s. 6d. to 40s. per 100 lb., ⅝ in. 50s.; brass rods, ¼ in. 1s. 5d.; ⅜ in. 1s. 3d.; ½ in. 1s. 2d.; ⅝ in. upwards, 1s. 1d. per lb.; hexagon brass rods, 1d. lb. extra; copper rods, ⅜ in., 2s.; ½ in., 1s. 11d.; ⅝ and upwards, 1s. 9d. lb.; tool steel, 2s. 11d. to 3s. 3d.; brass sheets, 1s. 10d. to 2s. lb.; copper sheets, ¼ in. to 18 gauge, 1s 10d. lb.; 20 gauge, 1s. 11d.; 22 gauge to 28 gauge, 2s. lb.; firebox copper, 2s. lb.; copper tubes, ¼ in., 3s. 3d.; ⅜ to ⅝ in., 2s. 6d.; ¾ to 4½ in., from 2s. to 2s. 4d. lb.; phosphor tin, 2s. 11d.; ingot tin (Lamb & Flag), 2s. lb.; ingot lead £28 per ton: drill steel, 5½d.; hollow, 7d. to 8d.; 1¼ in. 6½d. to 8d.; wire nails, 30s. to 35s.; shovels, 30s. to 40s. doz.; wheelbarrows, 35s. to 45s.; picks, 37s. 6d. to 50s.; pick handles, 19s. 6d.; hammer handles, 14 in., 7s.; 18 in., 7s. 6d. to 8s.; 24 in.. 10s. to 11s.; 30 in., 17s. 6d.; 36 in., 30s.; piping, ¾in., black, 4¾d.; 1 in., 5¾d.; 2 in., 1s. 1d.; galvanised, ¾ in., 5d.; 1 in., 7¾d.; 2 in., 1s. 7d.; ¾ in. steam 5¾d.; 1 in., 8d.; 2 in., 1s. 6d.; linseed oil, 7s. 6d. per Imp. gallon; turps, 26s. a case, c.i.f.; white lead, 71s. per 100 lb.; barbed wire "Shorthorn," 69 lb., 13 gauge, 19s. 6d. to 21s. per coil; plain galvanised fencing wires, No. 8 gauge, 100 lb. coils, 21s. 6d. per coil; No. 10 nauge, 100 lb. coils, 24s. 6d. per coil; No. 12 gauge, 100 lb. coils, 26s. 6d. per coil; bulb tee fencing standards, 14 lb., 19s. 6d. per dozen; 12 lb., 23s. 6d. per dozen; black baling wire, 14 gauge, 19s.

BE ON THE SAFE SIDE
— SPECIFY "SaBeN" —
SHEFFIELD STEELS FOR
ALL MINING AND GENERAL
ENGINEERING PURPOSES

"SaBeN"

RILL STEEL, HOLLOW DRILL
— STEEL, AUGER STEEL.—
"PITHO" OIL-HARDENING
— STEEL. —
"SaBeN" AIR-HARDENING
— STEEL, Etc., Etc. —

ALSO :—SHOES AND DIES, CAM
SHAFT STEMS, SHOES AND
— TAPPETS, TWIST DRILLS,—
REAMERS, GEAR CUTTERS, Etc

MANUFACTURED BY
**SANDERSON BROS. & NEWBOULD
LTD.**
SHEFFIELD

STEELS

SOLE AGENTS :
BARTLE & CO., LTD.,
LOVEDAY HOUSE,
[illegible]
JOHANNESBURG.
AND AT KIMBERLEY & DURBAN.

Telegrams : "NIVONIA," Johannesburg.
'Phones : 2196,—2197,—2198

J. & R. NIVEN, Ltd.,
**ENGINEERS,
CONTRACTORS,
MERCHANTS.**

BALATA BELTING
JAMES DAWSON & SON, Ltd.
BITUMEN SHEETING
GEO. M. CALLENDER & CO., Ltd.
BOILERS
PENMAN & CO., Ltd.
COAL CUTTERS AND CONVEYORS
JEFFREY MANUFACTURING CO.
COLLIERY PLANT
CAMPBELL, BINNIE, REID & CO.
DRILL STEEL
JOHN NICHOLSON & SONS, Ltd.
ENGINES, LOCOMOTIVES
ANDREW BARCLAY, SONS & CO., Ltd.
ELECTRIC LIFTS
A. & P. STEVEN, GLASGOW.
CRANES
BUTTERS BROS., GLASGOW.
HOSE, VALVES, SHEET RUBBER
THE LEYLAND & BIRMINGHAM RUBBER CO., Ltd.
LUBRICANTS
THOS. HINSHELWOOD & CO., Ltd
STEEL SCREENING
THOS. LOCKER & CO., Ltd.

**Barsdorf's Buildings, Marshall Street,
JOHANNESBURG.**

SULZER
HIGH-LIFT CENTRIFUGAL
PUMPS.
For Mine Drainage, Waterworks, Etc.

Pumping Set suitable for lift of 2,500 ft.

**LARGE LOCAL STOCKS IN
MEDIUM AND LOW-LIFT PUMPS.**

For particulars apply to:
RICE, WILSON & HERD,
86, 87, 88, 96, Standard Bank Chambers, Commissioner St.
P.O Box 930 Telephones 2299 & 2300. JOHANNESBURG.
Also South African Agents for
**CALLENDER'S CABLE & CONSTRUCTION CO., LTD.
BRITISH THOMSON-HOUSTON CO., LTD., etc., etc.**

Now in Preparation.

Special £1,000,000,000 Number of the "S.A. Mining and Engineering Journal" Year Book for 1922-23.

In 20 parts complete, in one large and handsomely produced volume.

PRICE 10/6. POSTAGE 1/6 EXTRA.

Order your copy now from the Publishers, 176 to 180, Stock Exchange Buildings, P.O. Box 963. Telephone 913. Johannesburg.

per coil, 100 lb.; 12 gauge barbed wire, 22s. per coil, 96 lb.; plain wire, No. 8 galvanised, 21s. per coil, 100 lb.; fencing standards, 21s. for 12's and 24s. for 11's; droppers, 40s. per 100; screening, 3s. to 9s. 6d. per square yard; cyanide, 1s. 6d.; zinc shavings, 1s. per lb.

The African Iron and Steel Products, Ltd., have reduced their price for liners. We understand that the liners are becoming increasingly popular; several mines which have been induced to put in liners as a trial have invariably given repeat orders.

Engineering Shops.

In the general gloom which has overshadowed most commercial concerns in recent months, it is satisfactory to note that engineering shops' activities are becoming livelier, and that the majority report very fair business and better prospects. All engineers are looking forward confidently to an increased business during the next six months.

Timber and Building Materials.

Business is fair in timber but not too brisk. 3 x 9 deals are getting short, particularly for long lengths. Baltic prices are firm, local remain without much alteration.

Timber prices.—3 x 9 deals, up to 18 teens 1s., over 18 teens, 1s. 1d.; scantlings, 10½d.; beaver boards, 4¼d. to 4½d.; floorings, 6d. to 6¼d.; ceilings, 4¼d. to 4½d.; Oregon, 5s. 6d. a cube; pitch pine, 7s. 6d. to 8s.; corrugated iron, 7⅞d. to 8⅞d. Furniture timber: Burmah teak, 17s. 6d. per cube here for first quality, 14s. 6d. for second at the coast; American oak, 1 in., 10½d.; 1½ in., 11d.; 2 in., 11½d. at coast; and Japanese oak, 1 in., 1s. 1d.; 1½ in., 2 in., 1s. 2d., at coast; West African mahogany, 1 in. to 4 in. thick, 26s. 9d. to 27s. 6d. per cube, at coast; Rhodesian mahogany, 9s. per cubic foot at mills; Honduras mahogany, 30s. per cubic foot; American yellow pine, 1s. 4d. per foot of 1 x 12 here; American pine shelving, 10d. per ft.; 3-ply wood, 3 m.m. up to 5 m.m., alder and birch, 4d. to 6½d. per sq. ft.; oak and teak, 3-ply, 10d. per sq. ft. Prices for bricks are the same. Klompje bricks, 25s. per 100 at works; fire-bricks, £10 per 1.000 at works; mixed, 70s.; wire-cuts, £4 10s. to £5; and £5 for pressed per 1.000, at kilns; columns from 20s. to 30s., according to size; roofing tiles, Marseilles, £25 per 1,000 at the works; chimney pots, 12 in., 7s. 6d.; 15 in., 9s.; 18 in., 10s. 6d.; dry red oxide, 16s. per 100 lbs.; white lime, 7s.; unslaked, blue plaster lime, 5s. 3d.; cement, 10s. a bag; damp 10s. 6d. per 180 lb. bag; 8 lb. bag, 1s.; blue lime, 4s. 3d.; course and roofing, 36s., 54s. to 55s. for 1 to 3-ply. Building operations at the moment are rather quiet, but the prospects within say two-three months are good. The recent abortive conference in respect of builders' wages is, said a prominent man in the trade, likely to result as from September 15 next in a cut of about 3d. an hour, which would bring the hourly wage down from 3s. 6d. (reduced from 3s. 10d. in April) to 3s. 3d. This, although from a man in the inner circle, is of course quite a matter of surmise, but may perhaps be taken as about what the next three months will show us regarding lower costs in the building trade. Lower costs are, of course, all to the good in the way of increased building activity, but as soon as the air has been cleared of a certain amount of uncertainty regarding future labour conditions, authorities think we should not be long before seeing many important contracts released and a return to something like normal building operations.

Electrical Goods.

The shape of things in the electrical goods section, said a prominent dealer this week, is much about the same, both as regards business in town and outside. One promising feature, however, is that inquiries although exiguous as to volume are of a more comprehensive character and lead dealers to hope for an upward movement in the near future. In company with most mercantile firms this big importer said he had a lot of money outstanding by reputable firms which it was very difficult to get in. He mentioned some accounts which had been outstanding for about 12 months, and which without pressure—when doubtless the money could by hook or by crook be found—were still illiquid. His impression was that people generally were still waiting for a more stable condition of affairs before launching out. The tentative inquiries now being made are so small in extent and range that one must believe this electrical wares merchant when he said that the community is not yet thoroughly satisfied that we have got down to bed rock either in regard to labour conditions or prices. This, however, was and could be only a passing phase, but he said dealers really did not know what to do at the moment. A lot of work was scheduled and would have to be undertaken within measurable time, and towards that time he, like all other commercial men, was looking. He thought that the probation would not be protracted. In the meantime stocks are abundant in all lines, but the tendency, as mentioned previously, is for prices to advance.

Union's Imports and Exports for June.

Appended is a statement of imports, exports and gross revenue collections for June month:—

	Value of Imports.	Value of Exports.
Capetown	£925,663	£3,865,135
Port Elizabeth ...	950,912	409,995
East London	346,282	102,637
Durban	1,219,280	515,064
Johannesburg ...	Nil.	Nil.
Lourenco Marques ...	359,579	See Note C
General Post Office...	See Note A.	Nil.
Other Ports and Stations	75,730	59,664
Totals	£3,877,446 (B)	£4,932,195 (D)

	Gross Revenue Duty.
Capetown	£102,888
Port Elizabeth	97,855
East London	39,940
Durban ...	128,392
Johannesburg	72,872
Lourenco Marques ...	15,773
General Post Office ...	22,473
Other Ports and Stations	22,492
	£592,685

Note.—(A) Figures not available. (B) Value includes £190,518 imports by South African Government. (C) Figures not available. (D) Value includes £3,471,274 gold exported at Capetown.

British Revenue.

The revenue of the United Kingdom for the first quarter of the financial year ended June 30 is £195,000,000 compared with £201,000,000 for the previous corresponding period. Customs duties amounted to £31,000,000, compared with £28,000,000 for the previous corresponding period.

The National Bank.

At the ordinary meeting of the National Bank last week, Mr. J. R. Leisk, in his first address, laid before shareholders a full and satisfactory report for the previous year. The losses incurred by the bank in New York were in no wise glossed over, but explained in a thoroughly businesslike manner, and the result of the meeting, with the frank disclosure of the losses incurred and the measures adopted to prevent similar losses, have created in financial and commercial circles a feeling of confidence in the future of this important institution.

Conditions in Germany.

The negative results of the Genoa Conference are now appearing in the economic situation in Germany, where prices are daily rising, labour difficulties are rife, and the position generally is causing much anxiety. Marks, according to latest cables, have now nearly touched 2,000 to the £.

Stagnation in German Shipping.

The working hands of the shipping companies at Hamburg are out on strike and a number of ships are consequently held up.

Johannesburg Power Station.

Owing to a breakdown of the new six thousand kilowatt turbine, curtailed supply in respect of both light and tram services has been necessitated. The difficulty is, however, expected to be only of a temporary character. The new turbine was expected to obviate many of the difficulties under which the Power Station was suffering, and its breakdown is a great disappointment.

Tenders are invited by the Johannesburg Municipality, per 25th inst., for galvanised pipe fittings, boiler tubes, felt and [illegible].

The Hekpoort Railway.

Construction work on the new railway which will run from Hercules, on the Pretoria-Pietersburg line, through the Hekpoort valley to a point on the Krugersdorp-Zeerust line, near Magalies Station, will, it is understood, be commenced next month from railheads about four miles from Hekpoort village and close to Pretoria.

Howick Rubber Works.

The development and output of these works are progressing splendidly. In rubber hoses alone the works are turning out more than 10,000 feet per month, and in rubber soles and heels the weekly output is rapidly progressing. In tyres also the company is doing well, and their manufactures are likely soon to sell freely throughout the Union. The works employ presently upwards of 50 white and 100 coloured persons.

Big Rail Fusion.

It is announced that the Brighton and South-Western Railway are taking in the South-Eastern and Chatham and Dover Railway preparatory to the forming of a new company with a capital of £59,000,000.

United States Railway Strike.

It is estimated that some 50,000 mechanics from the New England railroads to the Western Trans-continental lines have struck work in reply to a strike call by the Shopcrafts Unions. Trains are, however, running normally, as engineers and trainsmen are not affected.

Meanwhile, in consequence of the strike of nearly half a million workers, all railway repair shops in the United States are now idle.

S.A. Reserve Bank.

Statement of the Bank on July 1 showed ratio of cash reserves to liabilities to public at 77.9 per cent.

London Metal Market.

Quotations, 3rd July.—Standard Copper, £62 10s. cash, £63 forward; electrolytic copper, £69 10s., cash, £71 forward; standard tin, £154 2s. 6d. cash, £155 2s. 6d. forward; foreign lead, £24 5s. cash, £23 12s. 6d. forward; quicksilver, £11 15s.; bar silver, 36½d.; bar gold, 93s. 5d. per oz.

INVESTORS' DIARY.

Forthcoming Company Meetings.

(a) Annual general meeting; (s) special or extraordinary general meeting.

Meetings will be held in Johannesburg unless otherwise stated.

June 30.—Crown Diamonds (s), 12 noon.

Sept. 21.—Transvaal Gold Mining Estates.

Sept. 29.—Simmer and Jack Prop. Mines (a), 11.30 a.m.

Nov. 17.—Sub Nigel (a), 11.30 a.m.

£1,000,000,000.

In commemoration of the production in the Union of South Africa of minerals to the aggregate value of One thousand million pounds sterling,

The South African Mining and Engineering Journal

HAVE NOW IN PREPARATION A

SPECIAL YEAR BOOK FOR 1922-23.

Which will be a complete illustrated work of reference, containing all facts and figures relating to the South African Mining Industry, its technology and trade, and including valuable maps, diagrams, mine plans and statistical annexures, compiled by experts.

In 20 parts complete in one large and handsomely produced volume.

PRICE 10/6. POSTAGE 1/6 EXTRA.

Order early from the Publishers:

S.A. MINING & ENGINEERING JOURNAL,
176-180, Stock Exchange Building,
Telephone 913. P.O. Box 963.
JOHANNESBURG.

THE SUB NIGEL, LIMITED.

(Incorporated in the Transvaal.)

DECLARATION OF DIVIDEND No. 19.

NOTICE IS HEREBY GIVEN that a Dividend of 3¾ per cent., equal to Ninepence per share, has been declared for the six months ending 30th June, 1922, payable on or as soon as possible after 10th August, 1922, to holders of shares entitled to rank for dividends who are registered in the Books of the Company on the 7th July, 1922.

The Transfer Books of the Company will be closed from the 8th to the 15th July, 1922, both days inclusive.

The Dividend will be payable to Shareholders on the South African Register by Warrants to be issued from the Head Office of the Company in Johannesburg, and to Shareholders on the London Register by Warrants to be issued from the London Office of the Company.

By Order of the Board,

NEW CONSOLIDATED GOLD FIELDS, LIMITED.
Secretaries

C. HELY-HUTCHINSON,
Assistant Manager.

Head Office:
Consolidated Gold Fields Buildings,
Simmonds Street, Johannesburg.
30th June, 1922.

The Week's Meetings.

CROWN DIAMOND MINING AND EXPLORATION COMPANY.

THE RECONSTRUCTION SCHEME.

Improved Outlook.

At the 12th annual general meeting of the Crown Diamond Mining and Exploration Co., Ltd., held on the 30th ulto. at Lewis and Marks Buildings, Johannesburg, 145,565 shares were represented in person or by proxy out of an issued capital of 220,000. The chairman(Mr. T. Marks) said :—

Gentlemen,—The reports and accounts for the year 1921 have been circulated among shareholders.

I will deal first with the accounts. You will see that a loss of £3.989 11s. 10d. is shown for the year as against a loss of £21,587 14s. 11d. for the previous year. At December 31, 1920, we had on hand 5,591¼ carats of diamonds which, on account of the then abnormal depression in the diamond market, were taken in at a nominal value of 5s. per carat. These diamonds, as reported by the chairman at our last annual meeting, subsequently realised 30s. 6½d. per carat. Although a loss is shown, it must be realised that the mine was only worked on a small scale from the old open workings for the short period of 3½ months during the year under review, so that the results are not really comparable with those of the previous twelve months. The year's operations have not consisted in productive, but rather in exploratory and development work, which as you know is in the nature of capital outlay.

During the actual period of production, January 1 to April 14, 6,205 carats were recovered from 53,266 loads washed and were sold for 30s. 6½d. per carat, realising £9,475 11s., the productive cost having been £10,688 7s. 5d. The average yield was 11.65 carats per 100 loads as against the previous year's average of 8.41 carats per 100 loads. The average number of loads washed per month during this period was small, namely, 15,219, so that the working costs were correspondingly high and averaged 4s. 6.6d. per load, resulting in a working loss of approximately 5.46d. per load. I wish particularly to emphasise this position to you, because it is indicative of results under the old conditions, operating only on a small scale, with the old plant, and hauling our washing ground taken largely from the central portion of the open workings, which contains a high percentage of waste and barren matter.

I anticipate on information from our engineers that when the plant is remodelled and production on a large scale is rendered possible, we shall be able to save at least 2s. per load on this cost. 4,109 carats of diamonds were recovered from second sortings treated during the year.

Matter of Great Interest.

I will now pass on to what is undoubtedly a matter of the greatest interest and importance to us all, namely, the new mining area which has been disclosed in the southern and south-western region of the pipe. At our last meeting you were informed of the encouraging results which attended certain exploratory work in the southern and south-western portions of the pipe, and of the steps recommended by our consulting engineer, Mr. C. B. Kingston, to determine the actual nature and extent of the payable ground in this direction. In the first place an exploratory tunnel was driven at the 160 ft. level through the mass of hardibank in the south-west corner of the mine, and good blue ground was found behind and below it. This indicated the possibility of finding more good ground in the west end of the mine at the deeper levels. The prospecting shaft in the north-east corner of the mine was dewatered and the workings at the 440ft. level were extended further west, and after driving over 100ft. through basalt another area of good blue ground was found. A test washing from this ground gave very encouraging results. It was then decided to resume work at the 540ft. level. After extending the drives and making a cross drive to the contact, a test of the blue ground at this level was made, with still more encouraging results.

The results from the different levels age. At the 160ft. level, 2,089 loads, yielding 14.7 carats per 100 loads; at the 440ft. level, 3,871 loads, yielding 15.3 carats per 100 loads; at the 540ft. level, 1,089 loads, yielding 20.75 carats per 100 loads. The diamonds produced have been valued by two independent and leading valuators, and are as follows: Those obtained from the 160ft. and 440ft. levels average £1 4s. 6d. and £1 5s. 7d. per carat, whilst those obtained from the bottom, namely, the 540ft. level, are higher at £2 15s. 5d. and £2 13s. 3d. per carat. These results, gentlemen, speak for themselves.

No Longer Low Grade.

It is not suggested that these tests are exhaustive, but it may be said that an entirely new aspect of your mine is presented by these tests. A large proportion of the mine is no longer the comparatively low grade proposition it was consition of undoubted value with the greatest possibilities for the future.

Mr. Kingston states in his report of May 11 last, which has been circulated to members, that "so far as it is possible to determine by exploratory work and by test washings, there is enough blue ground in the better sections of the pipe to supply the new plant from open workings for the next five years, and with improved working conditions it is probable that this period will be considerably extended." We can therefore certainly assume that we have before us an extensive period of what I feel sure will be profitable work. We must combine this fact with the additional information just gained from the recent tests showing that the mine appears to improve in depth, not only in respect of the percentage of recoveries per 100 loads, but also in the quality of the diamonds.

This, I think, summarises in a few words the position of your mine to-day. We have no reason to doubt but that the further exploration of the mine at depth will reveal equal if not better results, and that the life and payability will consequently be further increased. Having dealt with the present and future potentialities of your mine, it now becomes necessary to consider what steps will be taken to ensure that the best results are obtained in working it. As you are aware, our existing plant, as it now stands, is of limited capacity and is expensive to work. In order to obtain in the future the maximum returns at a minimum working cost, our technical advisers are of opinion that a plant of greatly increased capacity and improved efficiency will have to be installed. Plans have accordingly been prepared for a complete remodelling of the existing equipment on new lines capable of handling a much greater output at a lesser cost, for which purpose it is estimated a sum of £33,000 will be required. With the installation of this new equipment we are assured by our engineers that we shall be able to treat up to 50,000 loads of ground per month instead of the 12,000 to 18,000 loads which we were able to treat in the past. It is further pointed out that by spending a further £7,500 the plant can be electrified and made still more efficient and economical. There is no need for me to point out to you what an immense advantage this would be, and what a marked reduction in the working costs should result.

Lower Working Costs.

Instead of having to pay 4s. 6d. to 5s. per load for the treatment of ground, it is estimated that on the new basis we shall be able to produce at a cost of 2s. 6d. per load.

Given cheaper production, such as this, and the price we can even to-day obtain for our diamonds, we should be in a position, with the improved yield from the mine, to show satisfactory profits, and render your company dividend paying. In order to achieve this, fresh capital will, of course, have to be raised to provide for the remodelling of the plant and sufficient working capital to continue operations until the mine is in full swing.

The directors, after the most careful consideration, have decided that this can only be achieved by a complete reconstruction of the company. If this takes place, provision can at the same time be made to extinguish the existing debt of about £80,000, and wipe out all losses accrued, so that the company can then start work unfettered financially, and with the most promising mining outlook. A scheme has been prepared by the directors and notified to the shareholders by special circular dated May 29, 1922. The necessary resolutions in connection therewith will be submitted to you at a special general meeting convened for the purpose, which will be held immediately following this meeting.

I will now conclude my remarks, gentlemen, in formally moving the adoption of the directors' report and accounts for the year ended December 31, 1921, as before you.

The report and accounts were adopted unanimously. The retiring directors, Messrs. L. Marks and A. S. Ash, were re-elected, and the appointment of Mr. T. Marks as a director was formally approved. Messrs. Alex. Aiken and Carter were re-elected as auditors.

A New Method of Magnetic Separation.

Many methods have been adopted for separating magnetic particles from ores by means of electro-magnets; and the field for invention might well appear to be exhausted. Nevertheless, quite a new principle has been adopted by a British electrical engineer for this purpose. He makes use of a special form of magnetic repulsion produced by a magnet energised by alternating electric currents. The repulsion is so efficient that it is able to separate the magnetic materials from a continuous flow of ore. The magnetic particles are simply pushed on one side and the remainder goes straight on.

PALMETTO PACKING

Rests upon the Solid Foundation of Quality.

[illegible]

[illegible]

"PALMETTO" is a practically frictionless packing, as it carries an unusual quantity and quality of graphite grease lubricant—keeps the rod perfectly lubricated.

[illegible]

[illegible]

BARTLE & CO., LTD.,
JOHANNESBURG.
E. W. TARRY & CO., LTD.,
Kimberley, Salisbury and Bulawayo.

PRICE'S CANDLES
(Made in South Africa)
FOR
MINING
AND
GENERAL USE

Burn Brightly & Economically

PRICE'S (South Africa) LIMITED
FACTORIES: CAPE TOWN & JOHANNESBURG
HEAD OFFICE: BATTERSEA LONDON

THE TRANSVAAL
COAL OWNERS ASSOCIATION
(1910), LIMITED

Head Office: GENERAL MINING BUILDINGS, JOHANNESBURG
P.O. Box 1197. Tel. Add: "COALSALES."

HIGH-CLASS STEAM COAL

From the WITBANK DISTRICT of the TRANSVAAL COALFIELDS.

Steamers calling at the Ports of Lourenco Marques and Cape Town can be supplied with Bunker Coal at short notice and with quick dispatch.

Large quantities of the Association's Coal are regularly exported to India and elsewhere.

Capacity of Collieries - - 600,000 tons per month.

THE ASSOCIATION'S COAL IS REGULARLY USED BY

South African Railways and Harbours
Caminhos de Ferro de Lourenco Marques
Clan Line of Steamers, etc.
Empreza Nacional de Navegacao
Union Castle Mail Steam Ship Co., Ltd.
Ellerman Harrison Line, etc.

AGENTS IN LOURENCO MARQUES:
Mann, George & Co. (Delagoa), Ltd.
Allen, Wack & Shepherd, Ltd. Delagoa Bay Agency Co., Ltd.

AGENTS IN CAPE TOWN:
Mann, George & Co. (South Africa), Ltd.

RHODESIA NATIVE TIMBER CONCESSIONS,
ELOFF STREET EXTENSION,
P.O. Box 5530. JOHANNESBURG. 'Phone 2671.

SPECIALITIES. Rhodesian Teak for Sleepers, Flooring, Lagging, and all Mining purposes; is impervious to water, unequalled for Strength and Durability, and low in price.

Rhodesian Mahogany. Specially recommended for Truck Frames, Guide Blocks, Furniture, etc.

PRICES AND ESTIMATES ON APPLICATION.

CARBIDE
—ALL SIZES—
IN 1, 5, 10, 50 lb. TINS
and 100 lb. DRUMS

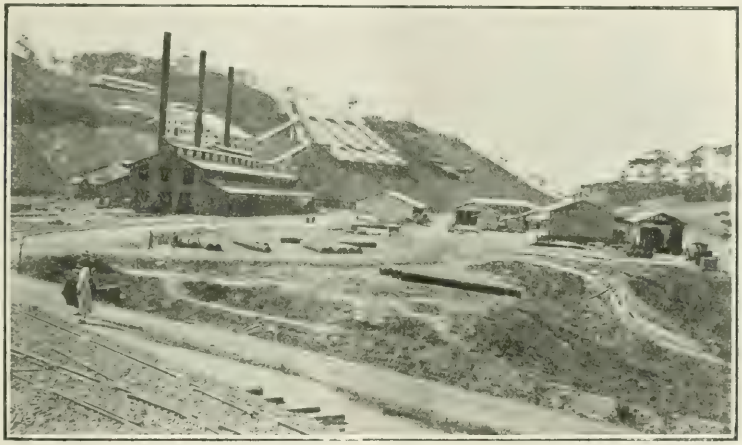
Apply: MANAGER,
RAND CARBIDE, LTD.,
SOUTH GERMISTON
'Phone 252 Germiston.

Mining Matters in the Union Assembly.—The Electricity Bill.—
Sharemarket Recovery.

The South African
Mining & Engineering Journal
THE ONLY MINING AND ENGINEERING WEEKLY PUBLISHED IN AFRICA.
Established 1891.

Vol. XXXIII., Part I. JOHANNESBURG, TRANSVAAL, SATURDAY, JULY 15, 1922 No. 1607

Two Great Base Metal Mines of the North.



The great concentrating plant at Panda, Katanga, which has a capacity of over 4,000 tons per day, and is said to be the biggest individual ore reduction plant in Africa.

The Rhodesian Broken Hill Mine Workings. On the left is the cave in which the remains of the famous prehistoric man were discovered.

SIEMENS BROTHERS

& CO., LIMITED

CABLES and WIRES

TELEGRAPHS

LINE MATERIALS

CABLE ACCESSORIES

TELEPHONES
MANUAL and AUTOMATIC.

FLUID CELLS

EBONITE

SIGNALLING APPARATUS

DRY CELLS

Representatives in South Africa:

A. J. G. SIMPSON, A.M.I.E.E.
African Life Buildings, 85, St. George's St.,
CAPE TOWN.
P.O. Box 239, Cape Town. Telephone 1202 Central.

G. H. B. BERNARD, A.M.I.E.E.
9-10, Cotts Buildings, Rissik and Fox Sts.,
JOHANNESBURG.
P. O. Box 7404, Johannesburg. Telephone 408 Central.

Telegrams : "SIEMENS."

Mining and Industrial Questions in the Assembly.

MINISTER OF MINES AND DIAMOND REVIVAL—THE CASE OF DAGGAFONTEIN—FAR EAST LEASES—THE AMENDED ELECTRICITY BILL—MANY IMPROVEMENTS.

An interesting speech was made by Mr. Malan, the Minister of Mines, in replying to various points raised in discussion of the mines and industries votes. Perhaps the most cheerful feature of his statement was that he believes we are within sight of the end of the slump in the diamond market. A revival before the end of the year can, he thinks, be foretold, and a movement had already been made to restart the mines in South-West Africa. Incidentally he refused to believe without very ample evidence Mr. Henderson's suggestion that the curious septennial slump in the diamond industry has been deliberately engineered for market purposes by the controllers of the industry. This particular question was subsequently the occasion of a very heated episode between Sir David Harris and Mr. Henderson (Boksburg). Sir David was naturally indignant, as being himself a leading man in the diamond industry, at any suggestion of the kind, but it is probable that he took Mr. Henderson's criticisms in a more personal sense than they appeared to have been intended. At any rate, Mr. Henderson denied anything in the nature of a personal reflection upon the honour of the diamond control, but still maintained that the main cause of all the trouble in the industry had been the high price at which diamonds had been held up even when there was only a limited number of buyers. To pass on to Mr. Malan's remarks, mention may be made of his reference to the East Rand situation. Mr. Sampson had suggested that the State should have undertaken the development of mining in the East Rand areas on its own account, but Mr. Malan pointed out that it would have been exceedingly difficult to raise the millions of money required, and that as a matter of fact one of the groups, after sinking £1,000,000 in a mine, had had to close down. "There is no intention," he said emphatically, "on the part of the Government to go in for this speculative business of opening up the East Rand with the taxpayers' money." Mr. Sampson's references to the question of miners' phthisis led Mr. Malan to explain that until normal conditions had been re-established in the industry and until it had known with a fair degree of accuracy what the burden of the existing legislation will be upon the mines, further legislation on the lines of the De Villiers report would not be advisable. The question of the Leyner drill was mentioned once more. Evidently opinions on the merits of the drill differ. It is highly efficient as a drill, but Mr. Sampson contends that it is dangerous from the point of view of miners' phthisis. The matter is being closely investigated, but it appears at present that the drill is safe enough as long as it is kept in good order. The recently drafted Bill for bounties for the iron and steel industry is apparently to be introduced at a very early stage, probably this session.

The Diamond Industry.

Referring to comments made by Mr Henderson on the diamond industry, Mr. Malan said it was a curious fact in the experience of the diamond industry that every seven years there had been a slump. The causes could be explained, and he did not think for one moment that the charge made against those who directed the industry was a well-founded one, or that they deliberately influenced the market in the way alleged. A few years ago an agreement was arrived at between the four main producers of the Union. If they had not that agreement, he was satisfied that the difficulties of the industry would have been infinitely worse to-day. He was hopeful that they had seen the worst. The sale of diamonds for the last four or five weeks had been on the increase, and although he did not want to say now that the slump was over, he did believe that they could foretell the revival, to a certain extent at all events, before the end of the year, and it was in view of that revival that a movement had been made to restore on a reduced scale the working of the diamond mines in South-West Africa. The Premier Mine had all along been at work on a small scale, but the company at Kimberley had not been able to do that. The production from alluvial diamonds had been rather on the increase, and on the whole the prices which they had received had not been so very low. He did not think they ought to lose sight of the fact that it was because of this agreement between the producers and the arrangements entered into that the alluvial diamond digger had been able to hold his head above water. An attack on the policy of the Department in certain directions had been made by Mr. Sampson. He had attacked the policy of the Department or the Government in regard to their East Rand gold mining policy, and had said that the effect of their policy under the 1918 Act had been that they had only leased one or two mines on the Rand, and that if they had gone in for a system of State mining all these areas would have been taken up. Judging by the tightness of money for other things during the last few years, and the financial position of the Government, he (Mr. Malan) doubted very much whether Parliament would have been in a position to provide the millions of pounds which would have been required for that purpose. As a matter of fact, under the Leases Act of 1918, a number of leases had been given out and a number of undertakings, seven mines in all, had been leased by the Government. One of these mines (Daggafontein) had shut down after sinking about a million of money. The parties had approached the Government with a view of altering the area of their mynpacht. The law, as it now stood, gave him no power to do that. He did not know whether it would be necessary to meet this particular company in some way or other to induce them to raise more capital and carry on, but that was a matter which the Government would have to consider during the recess. He might state that there was no intention on the part of the Government to go into the speculative business of opening up the East Rand with the taxpayers' money. Mr. Malan went on to say that one member had asked what about the future when the gold mines were worked out. "I think that date," continued the Minister, "is a little further off to-day than it was a few months ago, and with the development of electrical power, which will make power cheap and abundant for other industries, a great step will have been taken in connection with the coal industry, and jointly with that the question of the iron and steel industry and all the subsidiary industries that flow from it. I think we can confidently hope that as the gold mines dwindle away the coal and iron and steel industries will take their place."

The Amended Electricity Bill.

We are able to print in another part of this issue a summary of the valuable evidence given recently at Capetown before the Select Committee on the Electricity Bill. The case as put by the Victoria Falls Power Company, the Chamber of Mines, the Municipalities and the South African Railways is outlined, and the shortcomings of the Bill as originally drafted are clearly shown. The Bill, as amended by the Committee, has been printed, and a study of it shows that much of the criticism of the original Bill has been met. The general principle of the Bill could not be altered in Select Committee, and the two authorities—the Electricity Supply Commission and the Electricity Control Board—remain as in the original draft; but with vital differences in their constitution. It was feared by many that the Railway Administration might desire to obtain a dominating influence on both these bodies for its own purposes which would have been highly undesirable for many reasons. The objection has been met by the Select Committee, and no official in the employ of the Railway Administration can now be appointed either to the Supply Commission or to the Control Board. Appointments to the Control Board, too, need no longer be made solely from the Civil Service, though

Civil Servants may still be members of the Board. The success or failure of the Bill will largely depend upon the men who are appointed to these bodies. The main criticism against the original Bill was that it gave the Supply Commission special privileges against other undertakers of electricity, which might effectually close the door against private enterprise. This would be to nationalise by subterfuge a most important public utility. The criticism has been faced fairly by the Select Committee, which has introduced the important principle that, before establishing any new undertaking, the Commission shall call for tenders, which shall be referred to the Control Board and the Minister. Only after expert advice on them has been given, and after the most careful consideration, shall the Government decide between the Commission and any tenderer. There is, too, an additional safeguard now. Five years after the Commission has established an undertaking, or later if the Minister is of the opinion that such an undertaking might be more advantageously worked by another undertaker, tenders for it are to be invited. This is wise, and will serve as a check upon inefficient working. The general complaint against State undertakings is that they are difficult to adapt to changed conditions; but the new provision is, perhaps, the best practical method that could be devised to ensure economical working. The original clause empowering the Commission to differentiate in its charges as between various classes of consumers—a privilege expressly denied to other undertakers has been deleted, and the Commission is now rightly placed in the same position as other licensed undertakers. A schedule of standard prices will be fixed, subject to periodic revision by the Control Board. These are the main modifications which have been introduced into the Bill. The Select Committee seems to have dealt fairly with material objections, and the Bill should now have a smooth passage through its remaining stages. As to the desirability of the Bill in principle there is no controversy, and everyone will hope that it may achieve its essential object of enabling the Railways and other industries to obtain cheap electric power.

The Demand for Gold.

The plight of Germany, Austria, Italy and France in regard to depreciated paper currency recalls the wise prophecy of Mr. Samuel Evans at the Crown Mines meeting last year. He said: "History shows that the appetite for gold is intensified among populations who have for long periods experienced the extreme discomfort and the harassing uncertainty of a constantly depreciating paper currency. The inhabitants of the belligerent countries of Europe will not only want back the £400,000,000 of gold which since 1914 their Governments have exported to other countries in and outside of Europe, but a great deal more. Once they return to specie a reversion to paper money, however well secured, will be most unlikely so long as Governments are subject to the controlling influence of those who for some years suffered the ruin and misery of an inconvertible paper currency régime. Undoubtedly the capacity of the inhabitants of Russia and neighbouring States to absorb gold is enormous, and it is quite conceivable that in a not distant future the peasants of these countries will be exporting timber, furs, cereals, dairy and other products of the field and the forest at prices in gold lower than anything ever heard of before. That means that it is within the bounds of possibility that the time may yet come when the Crown Mines will find it profitable to start again at the outcrop and mine three-pennyweight main reef."

The German Menace.

Everywhere—not least in South Africa—people are asking themselves what is Germany's game as exemplified in courting "the inevitable financial crash." In some well-informed quarters it is considered that "the crash" is Germany's new objective and that its attainment will be the lesser of two evils. It is pointed out that the primary factor in national economic progress is the ability to produce and to trade—as was signally shown in Germany's own meteoric rise from poverty to wealth in the half-century preceding the war. If that be so, then finance, which has to do with accrued wealth, may under certain circumstances be subordinate in national importance to industry and trade, which are the actual makers of wealth. This subordination of finance to creative activities is clearly emphasised if a nation finds itself in the position of being beggared. It may then become a queston of practical policy whether finance as such—the set of stereotyped assumptions that count in the reckoning of international financiers—is not better thrown overboard, and energy concentrated upon the work of making new wealth altogether. One authority put it thus:

"Germany's position is that it has lost a substantial amount of its accumulated riches in the war, like all the other belligerents. It has also lost its colonies and some of its ill-gotten gains from previous wars, while still more of its accumulated wealth—or wealth to be accumulated in the future—to the tune of £6,600,000,000 is held forfeit in the name of reparations. Why, then, bother about the so-called financial integrity that is primarily the concern of creditor nations? Is it not the obvious policy of a nation conscious of virile producing power but condemned to financial decrepitude for generations to come—a nation, moreover, having no moral scruples worth mentioning—to get on with the job of creating new wealth as it was created before, by intensive industry, ingenuity, and thrift, leaving the outraged conventions of international finance to look after themselves? Some such reasoning we can imagine to be at the back of the mind of Herr Stinnes and the other industrial magnates who in a large degree lead, if they do not virtually rule, Germany to-day. It is the reasoning of the active industrialist whose thought, unlike the passive financier who thinks in currencies and credit, envisages the world in terms of the goods it needs and wants. That is Germany's new objective as it appears to us — the natural objective of a country possessing remarkable industrial capacity as the past has proved, and no longer dominated by military maniacs but led by men who believe in the conquering power of work. Would it completely paralyse industry and bring ruin and starvation on the German nation? Hardly. German industry since the Armistice has been largely financed by the printing press, and the same resource would still be available. The mark might depreciate towards the exchange level of the Austrian crown, and the unfortunate rentier class be reduced to practical beggary, but so long as the Germans worked and produced the goods the world is in need of, the debasement of the mark would help rather than hinder the profitable prosecution of outside trade."

'Phones 44 and 548 Germiston. Railway Siding No. 19
Telegrams: "FOUNDRY," Germiston.

East Rand Engineering Co., Ltd.,
New Industrial Sites,
—GERMISTON.—

General Engineers.
Iron and Brass Founders. Machine Moulding.

Shop and Shaft Stewards on the Mines.

REVIEW OF PAST WORKING EXPERIENCE—MANY DISADVANTAGES OF THE SYSTEM.

An important statement was submitted by the Chamber of Mines to the Mining Industry Board this week, explaining why the Chamber refused any more to deal with committees on the mines. *Inter alia*, it stated:—

"The Chamber's attitude towards the shop stewards and works committee system in 1921 was based upon the same policy as influenced it in 1915 in deciding to recognise the trade unions, viz., the desire to create a spirit of goodwill between the employers and the employees, in the hope and expectation that such would lead to greater co-operation and improved relationship between them, better efficiency, and the prevention of unnecessary stoppage of work. It is obvious that the securing of some such advantages is the only justification from the employers' point of view for the establishment of a system which at best must mean the introduction into the industrial machine of a new factor tending to weaken complete managerial control. It is only if additional co-operation achieved by the system brings about greater production and efficiency and to that extent more than counterbalances the weakening of managerial control that the employer can be considered to have any advantage from the system.

Weakening of Managerial Authority.

"Unfortunately, the experience on the Rand in the working of the system has not shown any increased efficiency or greater co-operation, but quite the reverse, while the weakening of managerial authority has been most pronounced.

"During the last few years the system of shop and shaft stewards developed under the aegis of the unions until it was general throughout the industry.

"Works committees, or grievance committees as they were sometimes called, composed chiefly of shop and shaft stewards, were developed to a considerable extent, but joint committees were in existence in only isolated cases.

"To have a beneficial influence, shop and shaft stewards should be men of high principle and tact, scrupulously fair, with broad views, and having a high regard for authority. Where such men had been appointed, they soon lost their position and influence and, instead of this class of man, those with aggressive and extreme views have been put in or forced themselves into the position.

Detrimental to Efficiency.

"On the whole, the effect of the introduction of shop and shaft stewards has been extremely detrimental to the efficiency of the mines. This is a direct result of the attitude taken up by these semi-union officials, viz., a high-handed interference between the management and the employees. This interference was carried to such an extreme that the men looked to the stewards rather than to the mine officials for direction as to what work they should do and how it should be done, a state of affairs subversive of discipline.

"They have interfered with the appointment and dismissal of workmen and even officials, claimed a say in these matters, and enforced their wishes by threat of strike. Under such threat, managers and their officials have at times, for the sake of peace, found it expedient to submit, with the result that the mines have been saddled with incompetent men, and the men, realising that the retention of their jobs depended largely upon their compliance with the wishes and directions of their stewards, have often had to ignore the instructions of their foremen whether they desired or not.

A group of shop stewards and white miners on the Rand in pre-strike days.

Fostering Discontent and Unrest.

"The activities of stewards have, for the most part, been high-handed and their energies directed to the discovery and fostering of grievances. Instead of exercising a deterrent effect on the natural tendency of men to grumble, they have encouraged it. In fact, it is not too much to say that they have been actuated by a desire to keep up a spirit of discontent and unrest in order to magnify the importance of their own office and to show how necessary the union was to the men.

"The calling of meetings during working hours by stewards has been of frequent occurrence, and some stewards have made a habit each morning of going round to each employee to inquire what he was doing, how much overtime he had worked, etc., thus interfering with the control.

"They have even gone to the extent of ordering men to go slow on the job, to reduce the speed of a machine, and to prevent men from doing certain breakdown work because they considered men from another department should be called in. Their example and indifference to the company's interests in this respect have induced an all-round slackness and disregard for conscientious duty.

"Not only have shop and shaft stewards interfered with the work of others, but their own department has, in most cases, been far from satisfactory. Believing themselves entrenched behind organised labour, they have taken advantage of their position to evade work by coming late, absenting themselves, or wasting time, and have resented any protests from mine officials.

Provocative Influence.

"Trivial matters have been exaggerated and used to engender disturbance, and it is well known that numerous lightning strikes have occurred within the last two or three years as a direct result of the provocative influence of stewards. They have shown an entire disregard for the welfare of the company, one of the main objects for which they were appointed, having either wilfully ignored or been unable to comprehend that on the success of the mine depends the ultimate well-being of the men.

"The shop and shaft steward movement, together with the system of works committees into which these petty union officials had formed themselves has been an unqualified failure in the past and is likely to be so in the future. Many of the advantages that should have been derived from the agreements governing the employment of workmen arrived at by collective bargaining between the leaders of the gold mining industry and the unions have been destroyed by the manner in which the shop and shaft stewards have sought to interpret or ignore these agreements, and by their disregard for the authority of their employers on the one hand and their more moderate union leaders on the other.

"The setting up of any kind of authority on a mine other than that of the management must lead to the usurpation of the functions of management, with consequent friction and ultimate conflict in the future, as it has done in the past."

FALCON MINES: PROMISING DEVELOPMENT.

The following is the text of a cable recently dispatched to the London office of the Falcon Mines, Ltd.:—"In the auxiliary shaft now being sunk from No. 12 level to No. 14 level reef appeared in the shaft between 40 and 50 feet depth, and part of it is dipping through shaft. Average of samples taken for 30 feet since sunk, 5 dwt. gold, 9 dwt. silver, 1¼ per cent. copper, over 65 inches exposed. While the existence of the ore body below No. 12 level is very encouraging, it is not possible to say whether a sufficient quantity will be found when this has been opened up at No. 14 level to prove an economical proposition, but the outlook may be considered promising."

* * *

Mr. G. A. Denny has been appointed the representative on the Rhodesia Chamber of Mines of Rhodesia Exploration Company, Ltd., *vice* Mr. L. G. Hutchison, resigned, and Mr. Denny has been elected a member of the Executive Committee *vice* Mr. L. G. Hutchison. Mr. A. M. Bentley has been appointed alternate on the Executive Committee for Mr. H. U. Moffat, M.L.C.

Ore Reserves.

OVER 80 MILLION TONS.

Rand's Stock-in-Trade.

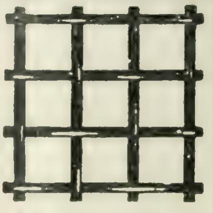
The following table gives the ore reserves of 39 Rand mining companies. The reserves total over 80 million tons, and are based on the figures given in the reports issued for 1921 or portion of that year. With the reduction in costs for the current year, it will, of course, be possible at the next valuation to include large areas of low grade ore that were ruled out of the 1921 figures owing to the high level of costs.

	1920.			1921.		
Companies	Tons	Dwt.	In.	Tons.	Dwt.	In
Aurora West	32,050	7.3	42	136,700	6.9	42
	80,570	5.5	42	28,300	5.9	42
Brakpan	2,526,517	8.88	70	2,423,230	8.6	68
City Deep	*3,099,200	9.0	66	*2,428,300	8.8	66
Con. Langlaagte	1,339,000	6.3	51	1,371,000	6.5	51
Cons. Main Reef	1,186,000	7.6	49	1,176,500	7.5	49
Crown Mines . .	*8,131,700	6.4	62	*8,511,200	6.1	
Durban Rood. Deep	*1,094,900	6.6	49	*1,092,100	6.5	
East Rand Prop.	2,410,850	6.1	59	1,946,650	6.7	59
Ferreira Deep . .	993,174	7.8	—	780,314	7.7	
Geduld Proprietary	3,220,000	8.0	61	3,545,000	8.1	62
Geldenhuis Deep	1,467,100	6.1	53	914,200	6.7	–
Govt. Areas (Modder) ...	10,291,000	8.2	77	10,232,000	8.5	77
Knights Central	150,700	6.1	—	*147,800	5.6	—
Langlaagte Estate	1,016,800	6.4	55	950,000	6.4	54
Luipaardsvlei Estate .. .	645,000	5.51		701,850	5.2	--
Meyer and Charlton . ..	450,050	14.1	54	395,887	13.8	56
Modder B.	3,006,600	8.6	61	2,773,300	9.6	63
Modder Deep	4,100,000	9.4	77	4,375,000	9.3	—
Modder East	1,611,700	7.7	57	1,913,900	7.1	58
New Goch	48,717	6.9	46	47,479	6.7	44
	56,915	5.0	50	15,958	5.6	48
New Kleinfontein	1,633,500	5.32	58	1,325.333	5.18	57
New Modderfontein	8,869,700	8.4	66	8,884,600	8.4	66
New Primrose	†26,500	7.6	54	†25.100	8.3	53
New Unified	†83,000	6.2	46	†38,900	6.2	44
Nourse Mines	1,513,600	6.8	51	1,589,030	6.9	51
Randfontein Central... ...	3,593,410	6.2	49	4,142,100	6.2	49
Robinson	115,200			—	.	.
Rose Deep	3,060,000	5.1	—	2,564,430	5.2	—
Robinson Deep	†1,597,000	6.97	65	1,936,000	6.7	66
Roodepoort United	249,108	5.8	41	82,772	6.0	40
				141,844	5.5	40
Simmer and Jack	1,230,000	5.53	78	1,081,000	5.7	76
Springs Mines	2,726,178	8.76	63½	3,056,231	8.9	61.5
Sub Nigel	359.000	10.4	44.2	†284,000	10.0	42
	partial 36,000	9.8	—			
Van Ryn	1,147,170	5.6	52	864,583	6.1	48
Van Ryn Deep	†3,260,000	9.7	72	3,317,000	9.2	73
Village Deep	2,381,200	6.1	—	2,087,700	6.3	55
West Rand Cons.	1,205,199	6.5	49	1,169,695	6.7	48
Witwatersrand	†774,500	6.0	63	547,300	5.8	63
Witwatersrand Deep	1,018,390	6.3	—	1,067,440	6.6	—
Wolhuter	661,904	5.7	62	*399,100	5.6	—
Non-Crushing Company						
Cinderella Cons.	1,024,800	7.0	—	1,024,800	7.0	—
	suspense 436,000			suspense 436,000	—	—

* Includes shaft and boundary pillars. † Mining tons.

SCREENING

Order No	Gauge	Space inch.
S2031	20	$\frac{3}{8}$
S2032	18	
S2033	16	
S2034	15	
S2035	14	
S2036	12	
S2037	10	



2½ Mesh, No. 16, Steel.

Ask us for quotations for all kinds and sizes of Screening; made in our own factories, and promptly delivered.

The S. A. Wire Co., Ltd.

P.O. Box 651, Durban.

Bounties for the Basic Iron and Steel Industry.

SCHEME OUTLINED BY INDUSTRIAL BOARD—INITIAL GOVERNMENT GUARANTEE TO ATTRACT CAPITAL—QUESTION OF SUBSIDIARY INDUSTRIES—TEXT OF THE BILL.

Some valuable information is contained in the report of the Board of Trade and Industries on iron and steel industry bounties, recently presented to the Union Parliament. The Board states that it was instructed to frame a scheme, with as much expedition as possible, setting out the amount of bounties which should be given. It was not called upon to report on the merits and demerits of the principle of bounties, and on this question it advances no opinion. As showing the enormous importance of the iron and steel industry to this country, the Board points out that the total imports of iron and steel, and of articles manufactured therefrom, amount to well over £10,000,000 a year. The report proceeds to refer to the formation of the Union Steel Corporation at Vereeniging, which was followed by others. But though there are several companies producing steel from scrap with a moderate rate of output, nothing beyond experiment has yet been done in regard to working up South African ore. There are three schemes afoot, but none of them has as yet succeeded in raising the capital required, notwithstanding the inducements held out in the form of Government contracts. Research has clearly established the fact that the resources of the country are far greater than was known some years ago.

The Union Steel Works at Vereeniging.

Cost of Production.

Though it still remains to be proved that our enormous deposits of titaniferous iron ore can be profitably worked, it is now beyond doubt that we have in the country ample supplies of good iron ore, of fluxes and of coke coal, all within moderate distance of one another in the Transvaal, besides other deposits in other parts of the Union. Though the expectations of those who anticipated that the prices of iron and steel oversea would remain at the high level of 1920 have not been verified, it remains true that the important inland market is strongly entrenched behind our railway rates, and that the costs of production promise to be low in this country. Various figures have been put to the Board, and the Board is convinced that the grant of bounties to a concern not capable of turning out at least 50,000 tons of iron a year would be waste of money. It therefore has no hesitation in recommending that no bounties be granted to any company which has not a capacity of at least 50,000 tons a year of iron or steel or 100,000 tons of the two together.

Object of Assistance.

The Board further recommends that bounties should not be given to any institution even if it has a capacity of output equal to the amount stated above, unless the scheme is approved by Government, and that this approval should not be given unless the Government is satisfied that the financial and technical provisions of the scheme are satisfactory and that there is room for it in the country. It appears to the Board from the data supplied that there is no need for bounties so far as pig iron is concerned, once the industry is firmly established. For successful operation the industry requires not bounties but cheap railway rates and the establishment of industries. The real object to be kept in view in granting bounties to the industry under present circumstances is the attraction of capital, which appears to be only half convinced by the mere merits of the enterprise and to require some further inducement and, above all, the assurance that the Government is prepared to take some part of the risk, and that the nation is determined, if possible, to see the undertaking through. After careful deliberation, the Board has reached the conclusion that a satisfactory measure of assistance would be provided if bounties were granted on such a scale as to ensure a contribution on the part of the State equivalent to about five per cent. on the capital during the first few years of development and operation.

Self-Support Expected.

The Board understands that with a capital of some £2,000,000 to £2,500,000 an iron and steel industry can be established capable of producing yearly at least 50,000 tons of iron and of converting it into steel. It considers that if bounties were granted on a scale sufficient to pay 5 per cent. on this capital for three years while the plant is being erected, and for eight years while it is operating, the industry should be able to develop so that it might be safe to estimate an average consumption of 150,000 tons a year for the whole period. Allowing for a total output of 150,000 tons of iron and a like quantity of steel, a bounty of 10s. a ton would give a total expenditure in eight years of £1,200,000. With this assistance the industry should be well able to finance itself for necessary extensions. The Board finds that there is great probability that the object of the bounties can only be attained by making advances against them. While admitting that this recognises a principle, the operation of which must be carefully watched, the Board suggests that, in case this proposal is agreed upon, the Government should take power to make advances against the bounties before they are actually earned, to an amount not exceeding the estimated total of the bounties.

Government Supervision.

With a view to meeting the necessity of some measure of Government supervision, the Board proposes that a single person should be appointed to represent the Government on the Boards of all the companies concerned, in order to ensure the common pursuit of a single national policy. With regard to the scale of bounties, the Board recommend that these should taper so that the grant would automatically cease after eleven years. That the rate should be calculated so as to amount to an average of about 10s. a ton during the whole period of production, allowing three years for erection, but that a high rate of bounty should be fixed for the first three years so as to stimulate progress. It therefore proposes the grant of a bounty of 17s. 6d. per ton for the first three years, 15s. a ton for the next three years, and then an annual reduction of 2s. 6d. a ton till the payment of bounties ceases. After full consideration the Board has decided not to make any proposals in regard to the question of bounties on subsidiary industries, such as wire-making, as it is clear that the case of these industries must be considered individually, and that it would be premature to consider them till the basic industry is established.

Text of the Bill.

The text of the Iron and Steel Industrial Encouragement Bill follows the recommendations of the Board of Trade and Industries. The first clause reads as follows: Subject to the provisions of this Act and the regulations the Governor-General may authorise payment out of the consolidated revenue fund of bounties for any financial year and at the rate indicated in the schedule to this Act in respect of pig iron and steel produced in the Union from ores mined in the Union, provided that such bounties shall only be paid if the Minister is satisfied on data supplied to him by the producer that the plant for the production of such pig iron or steel is capable of producing at least fifty thousand tons per annum of such pig iron or steel as the case may be.

Particulars to be Submitted.

The particulars to be submitted by any undertaking which seeks to take advantage of the bounties are set forth, and provision is made for the Government to be represented on the board of directors. Power is taken by the Government to examine the company's books and accounts, and a return of bounties paid is to be laid on the table in Parliament each year. The Governor-General is empowered to make regulations. The schedule sets forth the amount of bounties to be paid in each year, starting with fifteen shillings per ton for either pig iron or steel in 1924-5, and the two following years, and diminishing thereafter at the rate of 2s. 6d. per ton until in 1931-2 the bounty is only 2s. 6d.

Netherlands Bank Report.

The report of the Netherlands Bank of South Africa shows that last year's net profit was £24,888, of which £10,025 net was made in South Africa. A dividend was declared of 4 per cent. The contribution to pensions fund amounted to £10,000, and the balance carried forward was £2,788.

* * *

The New Municipal Loan.

At the Johannesburg Municipality meeting last week the Committee reported that an arrangement had been entered into with the National Bank of South Africa, Ltd. (London), to float a loan of £1,000,000, and recommended: (a) That the offer of the National Bank of South Africa, Ltd. (London), to float a loan of £1,000,000 be accepted, and that the Mayor be authorised to execute on behalf of the Council any necessary documents; (b) that the creation and issue, under the Johannesburg Municipality's Borrowing Powers Ordinance of 1900, of stock of the amount of £1,000,000 be authorised by the Council upon the following conditions: (1) Interest on stock to be paid at the rate of 5½ per cent. per annum; (2) the stock to be redeemable in from 15 to 30 years; (3) the price of issue to be £100 for every £100 stock; (4) the stock to be issued as inscribed stock only; (5) the stock to be transferred by entry in the books of the Council only; (6) the interest to be payable in London half-yearly; and (7) payment for stock to be made in such instalments as the National Bank of South Africa, Ltd. (London), may determine. (c) That the National Bank of South Africa, Ltd. (London), be appointed the authorised agent of the Council in respect of the said stock, and that the nominal register thereof be kept by the said bank. Mr. Robertson, the Town Treasurer, Pretoria, in an interview on the subject of the Johannesburg loan, said a similar offer had been made to Pretoria Municipality. The Treasurer said he thought Johannesburg might have done better. He had recently received offers to raise the Pretoria loan in instalments at interest varying from 5½ to 5 per cent., as money was raised with the possibility of better terms later on. "I do know," said Mr. Robertson, "that money is in the country, and banks and insurance companies do not know what to do with it." Turning to the Johannesburg loan, Mr. Robertson said nothing had been said about underwriters' commission and exchanges, but in any event Johannesburg, having secured its loan and gone out of the market, the position was much better for Pretoria and other borrowers. "We have not even replied to two recent offers from London for our loan. We have had seven different offers. If we get an offer of £100,000 at par at 5 per cent. for 30 years we may take it, but when people get only 4½ per cent. from banks and 3½ per cent. for short-time deposits, a municipal loan should be got to-day at 5 per cent., and at much less in a short time."

The "Small Man" and the Landowner.

PROSPECTING AND WORKING COSTS.

By J. Everard Anderson, M.I.Min.E.

> "*These men are free, too, from the power of the great capitalist—a power more withering than despotism itself to the enterprises of humble venturers.*"
> Eothen, by A. W. Kinglake.

It is nearly eighty years since Kinglake wrote these words and the men he referred to were the mariners of the Aegean Sea. They might, however, have been written with equal truth about the small mining man of the Transvaal who is sufficiently fortunate to be the owner of a property out of which he can make a living and a little to spare. In the past, the motto of the landowner seems to have been "What I have I hold," and while a few small mining men have the honesty to acknowledge that in the landowner's place they would probably have acted very much as he has done, in the minds of the vast majority there is a feeling that the landowners have adopted a dog-in-the-manger policy. The power of the great capitalist need not be withering to the enterprise of humble ventures, in the particular case under consideration; there is no reason why the landowner and the small mining man should not work together for their mutual benefit, and incidentally for the benefit of the whole of South Africa. All that is wanted is a more enlightened policy on the part of the owners of unoccupied land.

Prospecting.

Some of the large companies spend many thousands of pounds annually on prospecting without disclosing anything of value to themselves. They might save themselves a considerable amount of money and have a good deal of their prospecting done gratis, if they would allow, say, one prospector for each farm to have the right to prospect for minerals for a period of one year. In the event of a discovery being made the landowner could allow the prospector to have the discoverer's claims in perpetuity so long as they were being worked to the satisfaction of the Mining Commissioner, on a royalty basis of, say, 10 per cent., payable to the landowner. The advantage to the owner of unoccupied land of some such arrangement as the above would be very great, for he would obtain valuable information about his farm gratis, which in the ordinary way would cost him a considerable sum of money. Further, in the event of a discovery being made he could start in right away, adjoining the discoverer's claims and locate the extension of the discovery, without loss of either time or money. Should there be only the patch located by the prospector, the landowner would still draw his royalty on the gross product from the prospector's claims. From the landowner's point of view this method of dealing with unoccupied land would be more favourable than throwing the land open under Section 10 of the Precious and Base Metals Act, and the small man would know that all he would have to do would be to send the name and number of the farm he wanted to prospect to the Deeds Office, Pretoria, accompanied by a revenue stamp for 5s. in order to obtain the name and address of the registered holder of the mineral rights.

Small Mine Costs.

It would appear that in contradistinction to other industries, where an increased output means a reduced cost per unit, the small mining man in the outside districts can work more cheaply than the large concerns. Whether this is due to closer supervision of details or whether the success or failure of the enterprise is of more vital interest to the small man than it is to the average employee of a "soulless corporation," the writer is unable to say, but the following figures referring to a small mine in the Transvaal, equipped with a 5-stamp mill and cyanide plant, work out at 10s. to 12s. per ton less than the larger concerns working the same reef:—Cost per ton: White wages, 3s. 7d.; native wages, 4s. 10d.; stores, 8s. 7d.; total, 17s.

The cost for the larger concerns for the same period is from 28s. to 30s. per ton. One wonders where the high addition to the cost comes in, and to which of the above three items it is attributable. The foregoing figures show that the small man can cover cost with a recovery of 3·7 dwt. fine gold per ton milled, assuming gold at 92s. per oz., while for the larger concern it will take from 6 dwt. to 6·6 dwt. recovery to cover cost.

In the opinion of the writer it is a mistaken policy on the part of the owners of unoccupied land which has hitherto prevented them from granting facilities to reputable prospectors, but it is hoped that gradually more enlightened views will prevail.

SOUTH-WEST DIAMONDS (1920), LTD.

The directors of South West Diamonds (1920), Ltd., announce that they have decided to resume operations in full on this company's fields, by increasing their labour force gradually so that by the beginning of 1923 the full complement of natives will be working. The output for 1922 (January to June) is 1,134 carats, averaging 189 carats per month.

WE DO THE BIGGEST MERCHANT TRADE IN SOUTH AFRICA.

IRON AND STEEL

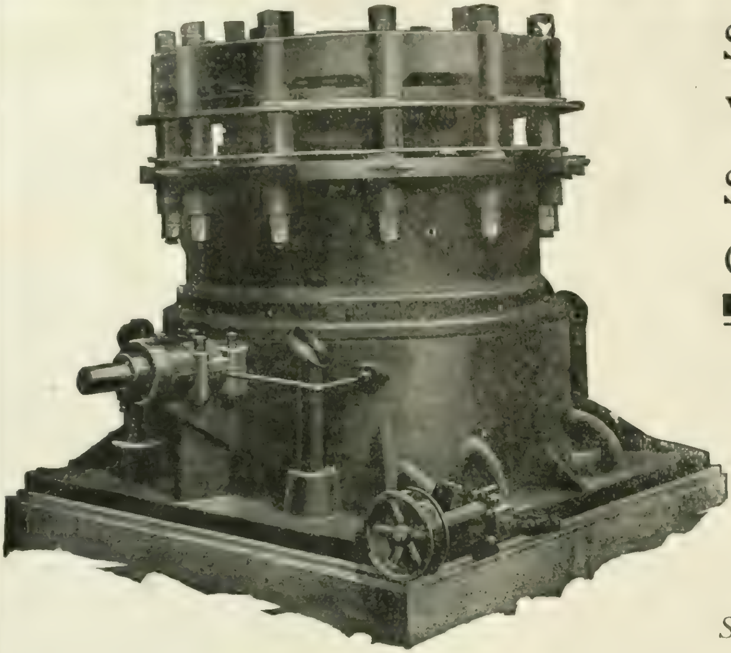
BARS, ANGLES, CHANNELS, JOISTS, TEES,
PLATES, BOLTS AND NUTS, SHAFTING, Etc.

COPPER AND BRASS

RODS, SHEETS, TUBES, Etc.

M. BROWN, STOCK SHEETS ON REQUEST
180, MAIN ST., JOHANNESBURG.

Telephones 5770 and 3248
Tel. Add.: "MAUBROWN,"
JOHANNESBURG.



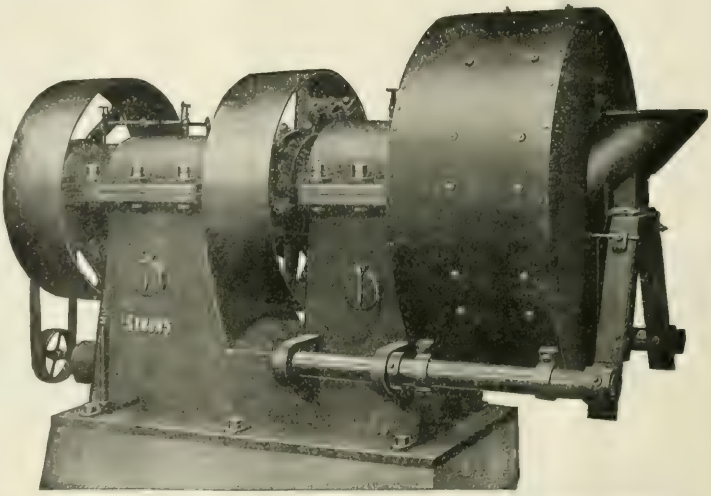
SYMONS
VERTICAL
SHAFT DISC
CRUSHER

SIZE : 48 Inches

Sandycroft, Ltd.
LONDON & CHESTER
(INCORPORATED IN GREAT BRITAIN.)

SYMONS
HORIZONTAL
SHAFT DISC
CRUSHER

SIZES
18″ 24″ 36″ & 48″



P.O. BOX 4453. Tele. "SANCROFT" PHONE 2794. JOHANNESBURG.

The June Output in Detail.

INCREASE OF 45.911 OZ.—15.000 MORE NATIVES—LOWER COSTS AND IMPROVED PROFITS.

In June the Transvaal mines produced 675,697 ounces of fine gold, the estimated value of which is £3,125,099, being an increase in production of 45,911 ounces and in value of £288,083 compared with the previous month.

The estimated price of gold for May was 92s. per ounce, while for June it was sixpence per ounce higher

The Witwatersrand output for June was 658,032 ounces, an increase of 45,329 ounces, the outside districts contributed 17,665 ounces, an increase of 582 ounces.

During June the groups declared profits totalling £854,380, as against £768,161 in May and £691,439 in December.

The native labour returns show an increase of over 15,000 boys compared with May.

Individual Returns.

		Inc.	Dec
Aurora West	2,734	39	—
Brakpan	25,816	491	—
City Deep	36,513	1,534	—
Con. Langlaagte	10,419	734	
Con. Main Reef	15,871	16	—
Crown Mines	53,049	3,389	
Durban Roodepoort	9,321	646	—
E.R.P.M.	28,648	2,616	
Ferreira Deep	7,004	1,645	
Geduld Proprietary	16,257	—	76
Geldenhuis Deep	12,714	455	
Government Areas	61,734	794	
Knight Central	5,833	547	—
Langlaagte Estate	13,818	811	
Luipaardsvlei	4,224	1,732	—
Meyer and Charlton	8,015	1,087	
Modder B.	32,665	5,116	—
Modder Deep	23,181	—	411
Modder East	10,283	1,460	—
New Goch	3,742	—	21
New Kleinfontein	11,547	1,234	—
New Modder	48,183	4,506	
New Primrose	4,205	343	—
New Unified	2,508	289	
Nourse Mines	13,983	494	
Randfontein Central	35,286	4,142	
Robinson	4,904	311	
Robinson Deep	17,430	1,276	—
Roodepoort U.M.R.	1,824	—	179
Rose Deep	12,360	1,616	
Simmer and Jack	10,491	2,191	
Springs Mines	18,606	898	
Van Ryn Deep	26,444	918	
Van Ryn Estate	9,087	1,409	
Village Deep	16,663	85	
West Rand Cons.	9,135	33	
Wit. Deep	10,663	860	
Witwatersrand	10,976	1,126	
Wolhuter	7,889	898	
Miscellaneous	4,037	738	

Outside Districts.

		Inc.	Dec.
Sub Nigel	6,050	336	—
Glynn's Lydenburg	1,477	13	—
Transvaal G.M. Estates	5,307	—	107
Miscellaneous	4,831	340	

Native Labour Returns.

The number of natives employed on the gold mines at the end of June was 170,464, which compared with the figures for May show an increase of 15,039. The official totals for the past seven months are as follow:—

	December.	January.	February.
On gold mines	177,836	142,473	132,492
On coal mines	13,230	12,562	11,517
On diamond mines	1,221	1,213	1,230
	192,290	156,248	145,239
	March.	**April.**	**May.**
On gold mines	124,169	138,277	155,425
On coal mines	11,155	11,385	11,525
On diamond mines	1,204	1,232	1,219
	136,528	150,894	168,169

Group Profits.

	April.	May.	June.
Central Mining	£199,206	£288,491	£349,785
Barnato	179,900	276,138	281,996
Gold Fields	14,406	13,500	19,158
General Mining	24,693	25,972	33,443
Mines Selection	26,686	71,012	74,841
Union Corporation	81,927	93,093	95,157
Totals	£526,818	£768,161	£854,380

Results for 18 Months.

The following table gives results for the past eighteen months:—

1921.	Output. Oz.	Daily average. Oz.	Estimated price per oz.
January	651,593	21,029	£5 5 0
February	558,137	19,933	5 3 9
March	671,123	21,649	5 3 9
April	681,382	22,713	5 3 3
May	687,776	22,186	5 2 6
June	678,490	22,616	5 7 6
July	689,555	22,244	5 12 6
August	711,526	22,952	5 10 0
September	691,096	23,036	5 8 6
October	707,825	22,838	5 1 6
November	704,236	23,474	5 2 0
December	681,847	21,995	4 15 6
1922.			
Jan., Feb. and March	639,728	—	—
April	511,338	17,044	4 12 0
May	629,786	20,315	4 12 0
June ...	675,697	22,523	4 12 6

INVESTORS' DIARY.

Forthcoming Company Meetings.

(a) Annual general meeting; (s) special or extraordinary general meeting.

Meetings will be held in Johannesburg unless otherwise stated.

Sept. 21.—Transvaal Gold Mining Estates.

Sept. 29.—Simmer and Jack Prop. Mines (a), 11.30 a.m.

Nov. 17.—Sub Nigel (a), 11.30 a.m.

GOLD MINE, NORTHERN TRANSVAAL.
£2,500.
Partner, Sleeping or active, with above capital for a producing Gold Mine. Five stamps working with 45 h.p. National gas suction plant and complete cyanide works. Capital required to increase plant and further development of property.
APPLY:
"GOLD MINE,"
S.A. MINING & ENGINEERING JOURNAL,
P.O. Box 963. JOHANNESBURG.

STRUCTURAL STEEL-WORK.

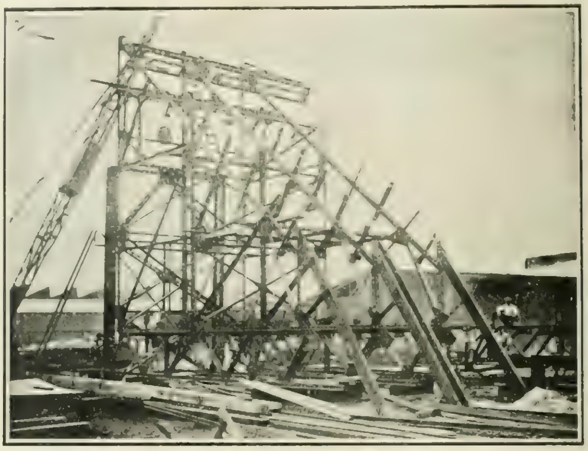
BUILDINGS, BRIDGES, ROOFS, TANKS, HEADGEARS, ETC

Sole Agents for HELICAL REINFORCING RODS.

Large Stocks of Steel Joists, Angles, Channels, Bars, Plates, etc.

Agents for the HARVEY ENGINEERING CO., LTD., Glasgow

Illustrations show part of an incline gantry for the Delagoa Bay Coaling Plant, under Construction



GILBERT HAMER & CO.,
LIMITED.

Head Office and Works: CONGELLA WHARF, DURBAN.
Box No. 301. Telegrams: "Girders."
Telephone No. 872.

Johannesburg Office: ROYAL CHAMBERS, SIMMONDS STREET.

"HUMBLE" SAFETY DETACHING HOOK

SOLE AGENTS:

GEO. CRADOCK
AND CO. (S.A.), LTD.
75-77, CULLINAN BUILDINGS.

P.O. Box 316. Telephone 539.
Tel. Add.: "ROPES."
JOHANNESBURG.

REID BROS.
(S.A.), LIMITED.

Sole Agents for:

CARRON COY.—HAULAGE GEARS, Etc.
ANDERSON, BOYES & COY.—ELECTRIC COAL CUTTERS.
HARDY PATENT PICK COY.—"HARDIAX" AIR COAL CUTTERS.
BLANTYRE ENGINEERING COY.—SCREENING PLANT.
WM. ARNOTT & CO.—CORNISH AND LANCASHIRE BOILERS.
QUASI-ARC ELECTRIC WELDING APPARATUS.
SMALL & PARKES—BELTING, PACKING, Etc.
FINNEY PATENT HAND PUMPS.
WELDLESS STEEL CHAINS.
CHAPMAN DOUBLE BALL BEARINGS.

JOHANNESBURG.
P.O. Box 802 'Phones 6070/1
AND AT DURBAN.

The South African Mining and Engineering Journal.

HEAD OFFICE: 176-180 Stock Exchange Buildings (2nd Floor), Fox Street, JOHANNESBURG, Union of South Africa.

Telephone **913**. P.O. Boxes **963** and **4573**.

Cables and Telegraphic Address: "MINING JOURNAL."

ANNUAL SUBSCRIPTION RATES: Oversea, £2; Union of South Africa and Rhodesia, £1 10s.; Local Delivery (Town only), £1 6s., payable in advance.

AGENTS FOR GREAT BRITAIN AND AMERICA: Argus South African Newspapers, Ltd., Byron House, 82-85, Fleet Street, London, E.C. 4.

Copies of this Journal are obtainable at all Branches and Agencies of the Central News Agency, Ltd., at all News Agents and Railway Bookstalls throughout South Africa, and at the London Agency as above.

CONTENTS.

PAGE
Mining and Industrial Questions in the Assembly .. 1525
Shop and Shaft Stewards on the Mines 1527
Ore Reserves 1528
Bounties for the Basic Iron and Steel Industry .. 1529
The "Small Man" and the Landowner 1531
The June Output in Detail 1533
Topics of the Week 1535
Letters to the Editor 1539
Share Market 1541
Engineering Section:
Views on the Electricity Bill 1543
Rhodesian Section:
Present Position of the Shamva 1545
Trade and Industries Section:
The Week in the Mining Material and Engineering Trades 1547

TOPICS OF THE WEEK.

The Outlook.

As we advance further into the second half of the year the general business and industrial outlook continues to improve. Were it not for the fear of a financial crash in Europe as a result of Germany's plight—the possible effect of which no man can exactly measure—there would seem to be no cloud on the horizon. The Union Government is embarking upon a vigorous development policy, upon which it proposes to spend no less than eleven millions from loan funds. New railways and other reproductive public works—including harbour works for Walvis Bay—bulk largely in the Government programme. The Johannesburg Municipality is following this bold example by raising a million to complete important extensions to its existing undertakings. The mining industry is gradually putting its house in order, and the June returns from the Rand show healthy and progressive savings under the head of working costs that bid fair to offset the decline in the gold "premium." Each month that passes, indeed, puts the industry in a better position by reason of the improved native labour supply and the greater white efficiency being obtained. The Mining Industry Board continues its useful work of elucidating the present day conditions on the mines, though its members do not disguise their impatience at the wearisome reiteration of opinions. The discussion of mining questions has also taken up much time in the Union Assembly during the past few days, as more fully shown elsewhere in this issue, and the Minister of Mines has ventured to predict a revival of the diamond industry for next year. This is good news, and if only the American coal strike were brought to an end—as it now seems in a fair way to be—and the European currency troubles alleviated, there might be hope for our base metal mines as well. The note of confidence upon which Sir Lionel Phillips concluded his speech at the Central Mining meeting appears, therefore, to be thoroughly justified, and granted freedom from the repercussions of world troubles, South Africa now seems to be in sight of better times in almost every branch of industry and trade.

The Shop Stewards System.

The shop stewards system has furnished the Mining Industry Board with much food for discussion during the week. Extracts from the evidence submitted by the Chamber of Mines are printed elsewhere in this issue, and on this statement technical representatives were examined. Mr. Gemmill explained, in reply to a question from Mr. Brace, that his object in bringing these witnesses was to show that the shop steward system was unsatisfactory in the first place and unnecessary in the second. Mr. Brace made it clear that if the Chamber took up the attitude that it would have nothing to do with committees, he would never be convinced that this policy was right, and that it was "striking too high a note" for him. Sir Carruthers Beattie considered that an excellent statement had been put before the Board by the Underground Officials' Association, and it was the duty of the Board to find out how far the views expressed there were correct. Mr. Gemmill here suggested that the underground officials should be asked to prove their statements, and pointed out that already some of them had been contradicted before the Board. When the "flat" and "low cost" contracts question came up, a long discussion ensued. It was argued in favour of the new system that it made the remuneration of the highly skilled and the unskilled worker less far apart, and that the latter benefited thereby, and obtained a living wage. The allegations of Colonel Pritchard before the Board on the question of inefficiency in the native working, and now known as the "eight points," which Mr. Brace stated he was as well acquainted with as the Ten Commandments, were refuted point by point by Mr. Payne, under examination by Mr. Gemmill, Sir Robert Kotze pointing out that the Board was prepared to believe that there was a majority of managers who disagreed with Colonel Pritchard's conclusions, but if there happened to be a minority who might agree with them those were the witnesses the Board would like to hear. When Mr. Gemmill asked Mr. Payne what was the greatest drawback from which the mining industry suffered, and witness replied the shortage and variation of the native labour supply, Sir Carruthers Beattie said that although he expected that answer would be forthcoming he was nevertheless nervous lest the witness should say "commissions." Much laughter, we are told, followed this sally.

The Price of Gold.

It is difficult to find the explanation for the recent drop in the price of gold and the rise in the value of sterling. From January to May the New York-London exchange rose from 4.22 dollars to 4.45. Then, according to expert anticipations, the value of sterling should have receded. It was the time of year when America draws bills on London for the financing of cotton and wheat shipments to Europe; and the half-year's interest on Britain's debt to America was in sight. For both these reasons the price of sterling ought to have developed a downward tendency towards the end of May and during the early part of June. But the reverse happened. Sterling rose even more rapidly than before; and by June 8 the New York-London exchange stood at 4·50⅞ dollars. As is well known, the price of gold is more or less linked to the New York-London exchange: the price of gold falls as the price of sterling rises. On this occasion the downward pull on gold of the New York-London exchange was reinforced by the temporary cessation of India's demand for bullion. During the week ended June 7, for example, out of South Africa's consignment of £301,123 worth of gold India bought only £27,184, the bulk of the remainder going to the United States. As a result the price of gold fell about June 8 to 91s. 6d., the lowest figure reached since September, 1919, the date when dealings in the open gold market were begun. From about the middle of June the New York-London exchange fell steadily until a few days ago it stood at about 4.39, dollars, and the price of gold had risen accordingly to about 94s. 2d. Since then there has been another sterling rise. But the reasons for the original rise in sterling are still undecided, and no man knows what the future will bring. Various possible explanations have been put forward to account for the rise during the first ten days of June, but none can be accepted as conclusive. The real truth seems to be that the speculative element is largely to blame, and that the gambling in marks and dollars and pounds is the cause of most of the fluctuations in the exchanges. For us the great point is, as *The Cape Times* reminds us, that the price of gold is swayed by world-conditions, none of which is within the control of either the gold mines or the Government of this country. If the safety of the gold industry of South Africa is to be assured, the industry must be able to be independent of the gold premium. The industry cannot exist on sound lines if it has to look for its profits to the continued depreciation of English paper and the sentimental vagaries of speculators in the exchanges.

Central Mining Meeting.

The speech made by Sir Lionel Phillips at the Central Mining meeting in mail week has already appeared in cabled summary form, and interest in the full report received by this mail has therefore been largely discounted. A point about which the cables were silent was the practice of equalising monthly returns. In regard to this, Sir Lionel Phillips said: "I must not ignore the reference by the consulting engineers to the cost of securing an output of gold month by month as regular in amount as possible. The cost varies according to circumstances in different mines; it is greatest when labour is scarcest. To move men and tools from stopes in which too high or too low a yield is being obtained to other stopes expected to reduce or raise the yield to the normal cause a certain amount of disorganisation and expense. Our engineers do not recommend the abolition of monthly returns but the abandonment of the practice of trying to equalise them. I admit that some economy would result. I should hesitate, nevertheless, to recommend the change, because shareholders are accustomed to the present practice, and the effort to equalise the returns month by month necessitates very close daily study of the amalgam returns by the managers; moreover, there are other factors which I do not think it necessary to enlarge upon to-day. We should not, therefore, be inclined to change the present system unless public opinion appeared to be very strongly in favour of the reform." In regard to the Rand and the future of working costs, Sir Lionel Phillips ended on a note of cheerfulness and hope. He said: "What is needed above all things, and what I believe is coming, is renewed confidence in the mining industry, to which, given fair treatment, it is indeed entitled. Some of the mines which are still in the earlier stages of development need large capital outlay to establish them on a proper basis. At a level of working costs which I believe it is quite reasonable to attain, the provision of those funds would be justified and could no doubt be secured. It is true that in these days of financial stress people want, above all things, good security, but, given fair chances of substantial gain if all goes well, they will also take a speculative risk, but they must be satisfied that new capital commitments are entered into not upon promises as to what may be done, but upon the evidence of what is being done. The great industry about which I have offered you a few observations to-day has not in the past enjoyed the sympathetic treatment it deserves, holding in view, particularly, its importance to South Africa as a whole. I do think there is real hope for it now, as I am sure that the load under which it has staggered during the last few years—a load that would have crushed it but for the currency value of gold—is going to be lightened. Working costs are coming down, and I am encouraged, therefore, to expect that when I meet you next year I shall be in a position to report a more satisfactory situation in regard to the working conditions at the mines than has existed during the last few years."

South Africa's Reserve Bank.

The sensational rise in the shares of the S.A. Reserve Bank—a rise, by the way, predicted in these columns—has brought a shoal of queries regarding the prospects of this institution. The first report—that for the period ended March 31 last—showed a profit of £45,524. A dividend of 6 per cent., absorbing £35,443, was declared out of this. According to the Currency and Banking Act, 1920, under which the Bank was formed, of the authorised capital of £1,000,000, no stockholder, except the subscribing Banks and the Treasury, may hold more than £10,000, and it is an interesting fact that no holding on account of trusts is allowed. £300,000 had been subscribed by the South African Banks, who were under statutory obligation to hold stock equivalent to five per cent. of their individual capitals, and the balance was offered for subscription in South Africa in May of last year. The beginning of August saw the paid-up capital well in excess of half-a-million; two months later three-quarters of a million was in hand; and in March, the final month of the accounting period, the £1,000,000 was fully paid up, and the number of stockholders reached 1,044. The maximum dividend that can be paid is ten per cent., after which surplus profits go to reserve in certain proportions until the fund equals the paid-up capital, when the Government claims them. The Bank has a monopoly of note issue within the Union for a quarter of a century, but its displacement of the non-official banks from one of the fields in which private enterprise had previously met a public need was accompanied by a proviso that the Reserve Bank would not enter into active competition with the commercial banks for ordinary banking business. The principal liability of the new Bank is in respect of bankers' deposits, and the major asset that of gold certificates, which under the Act above referred to are exchangeable for gold only when the Government, owing to the market value of the metal falling to the old parity of £3 17s. 10½d. per fine ounce, proclaim that this may take place, and in any case are inconvertible until June 30 of next year—a date, moreover, beyond which an extension has for some time been under contemplation. The measure provided that whenever the redemption of gold certificates was suspended the Treasury might require the banks to deposit with it the whole or a portion of the gold held by them, and issue gold certificates instead. The accounts show that the Union Government has borrowed over £2,000,000 at a rate of interest that is not disclosed.

Union Taxation of Industries.

Mr. W. A. Martin, the new President of the Johannesburg Chamber of Commerce, is doing sterling work in pointing out the heavy incidence of taxation on the industrial development of the Union. At the last meeting of the Chamber he showed that, taking the total income of 1921 as equal to that of the year ending June 30, 1918, the taxation in 1921 was over 15 per cent. of the total national income as compared with 10 per cent. in 1918, an advance of 50 per cent. Mr. Martin went on to say that practically the whole of the taxation had, as at present levied, to be provided at the cost of production and industry, very much to the detriment of the development of the country, sooner or later. He did not think there was any doubt that economic forces would compel an alteration in the incidence of taxation so that production and industry might be relieved of at least a portion of the heavy burden they bore at present. It would be of great benefit to the country if a land tax on the lines of that in force in some of the Federal States in Australia were adopted, the amount of which was remitted if the owner paid income tax on income derived from agriculture or pastoral pursuits, so that the tax on land was felt only by those who held it up and did not put it to beneficial use. A tax on unearned increments, also, was a legitimate form of taxation which would not fall on production or industry. Any taxation discriminating against capital, particularly capital already invested in the industries of the country which could not be withdrawn, was unwise and shortsighted. The employers' tax was a case in point. It was admittedly designed to penalise the mining industry in particular, although it would also, if brought into force, be felt by other industries as well. If this kind of taxation were allowed it was certain that it would not be forgotten when further capital was required, and a higher rate of interest would be demanded to compensate for the risk run of similar spoliation in future.

The Coinage Bill.

The Coinage Bill, introduced by Mr. Burton last week, contains many interesting features. Substantially, the measure is intended to establish a South African currency in coin. In the days of the South African Republic there was a mint at Pretoria, at which coin to the value of £2,700,000 (including £2,300,000 gold coin) was minted, and a good deal of that is still in circulation. But since 1903 all our coin has been minted at the Royal Mint in England. Now that the new South African Mint, a branch of the Royal Mint, is almost completed and fully equipped, we are going to meet our needs in coinage at Pretoria. For the present there will be no gold coinage for the simple reason that, as long as the premium on gold remains, gold producers will find it more profitable to sell in the open market than at the fixed price to the Mint. Furthermore, our gold certificates are inconvertible, and gold is not in demand for local currency purposes. When we do begin to coin gold our Mint will produce not a distinctive type of South African sovereign, but the British sovereign, and this for the excellent reason that the British sovereign commands world-wide respect and is sought everywhere. Even in the days of Kruger sovereigns, although they contained a larger amount of gold than the British, their recognition was confined to South Africa. Similarly the Australian Mints, as Mr. Burton pointed out, mint British sovereigns only, and in those far off days two or three years ago, when one saw gold sovereigns in South Africa, most of them were British sovereigns coined in Australia. But we shall have our own distinctive silver coinage, and this will be the Mint's chief business in the early future. The silver coinage now current in South Africa will be gradually replaced by the new mintage, the silver for which will be obtained for the most part from the gold bullion refined at Johannesburg. From this source some £250,000 in silver annually will be secured.

The New Silver Coinage.

The purity of the silver coin presents an interesting problem. Ever since the days of Queen Elizabeth until very recently British silver coins contained 92½ per cent. of silver. To-day, under the influence of the rise in the price of silver, the proportion in the currency is only 50 per cent. Mr. Burton has decided that the percentage of silver in South Africa's silver currency shall be as high as eighty, and on this basis a profit of about sixteen per cent. is anticipated. When the Mint is in full operation the coins manufactured will be the sovereign and the half-sovereign (gold); the half-crown, florin, shilling, sixpence and threepence in silver, and the penny and halfpenny in copper. Our new coinage is intended to be attractive, and designs will be sought which will be thoroughly characteristic of the country, bearing, it need hardly be said, our King's head.

The Railway Bill.

The Assembly spent some time this week in carrying through Committee the clauses of the Railways Construction Bill, with Mr. Jagger in charge. One of the most interesting points discussed was a clause whereby the Lands Department may agree to pay to the Railway Administration some proportion of the money derived from the sale or lease of Crown Lands which are served by new railways. The object of this clause is to give the Railway Department some proportion of the enhanced value which may be expected to arise from the sale of lands which are brought within reach of the market. Some objection was taken to the provision by Mr. Geldenhuys and various Nationalist members, who were inclined to suspect that the clause is the thin end of a wedge whereby it is ultimately intended to tax privately-owned as well as Crown land. During the debate Mr. Nixon caused some alarm by suggesting an amendment which would enable the Railway Administration to levy some kind of taxation on privately-owned farms which had derived benefit from the construction of railways. Mr. Fourie sought to show that one of the clauses in the Act of Union already makes ample provision in the event of a non-paying railway being built, and appeared to challenge the wisdom of making a special levy even upon Crown land. Colonel Reitz pointed out that railways could not be built to-day into undeveloped districts, for the simple reason that if the Government proposed such lines they would be severely attacked for not building railways into developed districts. Thus a dilemma exists. You cannot have a railway unless you have settlers already there, and at the same time you cannot have settlers unless you have a railway. He quoted Canadian parallels for the principle embodied in the Act, and mentioned that if railways were to be built, for example, through Zululand, the price of land would rise at once from about 5s. a morgen —its prairie value—to as much as £5 a morgen, and in such a case, if the Crown were to sell its land before the railway were built, it would in effect be giving a very handsome bonus to the purchasers who subsequently benefited by the coming of the railway. Ultimately the clause was adopted.

The House then concentrated on the Schedule to the Railway Bill, detailing the various lines which are to be constructed. One line which has been the subject of much criticism is the Ermelo-Lothair railway, but Mr. Jagger insisted that the Board, as well as he himself personally, had given the utmost care and thought to the problem of the route to be selected, and is quite satisfied that the right route has been chosen. There was a tendency to resent the building of the Fort Beaufort-Balfour line on the narrow gauge, but Mr. Jagger argued that the country, if it wanted railways at all, would have to be satisfied with light railways in districts which would not justify lines of standard gauge, the essential principles of low capital and cheap working costs being vital to the agricultural development of the hinterland. He mentioned incidentally that in South-West Africa the light railways have proved most economic, and have shown an astonishing capacity for dealing with traffic at a high rate of speed.

De Beer's Dividends.

The Directors of De Beers Consolidated Mines state that although the demand for diamonds has improved, they regret they are not yet able to declare dividends on either Preference or Deferred shares. The last dividend paid on De Beers Deferred was 10s. in December, 1920, while the Preference shares' cumulative half-yearly 10s. is in arrears since June, 1921. We have chronicled on various occasions of late signs of a gradual recovery in the diamond trade. Indeed, the sales of the stones were at one time—if they are not still—up to the rate of several millions sterling per annum. On the Paris Bourse a hope grew up that last month the De Beers Company would pay the postponed Preference dividend for the second half of 1921. This idea was not, however, shared in London, for the amount involved would be as much as £400,000, and production by the famous Kimberley mines has not yet been resumed, so that it remains desirable to conserve resources.

Swazi Tin.

The following are the results of the operations of this company for the month of June, 1922:—Concentrate recovered, 20 tons; estimated net profit for the month (including credit adjustments on previous shipments), taking tin at £150 per ton, £312.

Notes & News.

S. A. M. Year Book.

IMPORTANT ANNOUNCEMENT.

The special number of the "S.A.M. and E.J." Year Book, which is now in preparation, will contain a valuable section on the coal fields and collieries of South Africa, Rhodesia, the Congo, and Portuguese East Africa. The Natal, O.F.S. and Transvaal coal mines will be dealt with at considerable length, and all details concerning area, finance, outputs, plant and character of coal will be given. There will also be special articles on Durban, Delagoa Bay and Beira as coaling ports, and these, combined with descriptions of the geology of the coal fields and the railway systems which serve them will revise and bring up to date the valuable data contained in the Special Coal Numbers of the Journal issued in 1919 and last year, and which universally were acknowledged to represent the best, most reliable, and comprehensive literature on the coal fields of South Africa that has been issued. The forthcoming Special Number will also contain valuable articles on the by-product industry.

* * *

Mr. J. W. Kirkland's Address.

The new President of the S.A. Institute of Engineers, Mr. J. W. Kirkland delivered an important address at the meeting of the Institute on Wednesday evening. His main theme was "education for all broadcasted by wireless telephony and its effect on the engineering profession." The address maintained a high level of thought throughout, and we hope to print extracts from it in our next issue.

* * *

Coronation Syndicate.

We understand that operations at the Luipaardsvlei No. 10 property of the Coronation Syndicate are now confined to sinking another borehole to locate the two reefs and to elucidate questions relating to their depth and distance from each other.

* * *

S.A. Engineer Graduates.

In the Assembly this week the Minister of Railways and Harbours told Mr. Strachan that the Administration's policy was to utilise South African graduated engineers as far as practicable. Additional engineers were engaged as required, and several appointments had been authorised in connection with new construction and electrification works.

* * *

Some Striking Cost Reductions.

Perhaps the most creditable performance in cost reduction since the strike is that shown by the old Wolhuter for June as compared with November last. The reduction was 5s. 3d. per ton milled. The Modder B shows a saving of 3s. 9d. per ton milled for June as compared with November, and the Robinson Deep a saving of no less than 5s. per ton milled. Every mine on the fields shows a more or less substantial reduction, but these figures are the most noteworthy.

* * *

Union Mineral Statistics.

The Union gold output for May month amounted to 618,078 oz., value £2,625,428; silver, 111,340 oz., value £16,701; diamonds, 50,800 carats, value £148,275; coal, 911,262 tons, value £331,935; tin concentrates and metallic, 45 tons, value £4,753; copper ore and concentrates, 47 tons, value £1,875; other base minerals, value £17,033. The total value was £3,146,000. The coal output of the Union has advanced from 7,594,944 tons, valued at £1,935,153, in 1911, to 11,396,905 tons, valued at £5,072,401, in 1921. In May, 1922, the Transvaal produced 490,742 tons, Cape 648 tons, O.F.S. 20,634 tons, and Natal 171,024 tons; a total of 331,935 tons.

Mining Law Amendment Postponed.

The report of the Select Committee on the Transvaal Precious and Base Metals Act Further Amendment Bill was presented in the House of Assembly this week by Mr. Malan (Minister of Mines and Industries). The Committee stated that the time remaining was quite inadequate to go into the matter fully, and recommended that the House order its discharge from further service this season, and that the proceedings on the Bill be resumed next session. The report was adopted.

* * *

Reserve Bank Loans.

In the weekly returns furnished by the S.A. Reserve Bank appears an amount of over two millions loaned to the Union Government and some £80,000 in other directions. The "Cape Times" declares that the rates of interest should also be published, so that the public may be able to follow intelligently the operations of this institution.

* * *

Telephone Extension.

Perhaps the most interesting fact that emerged during the discussions on the Post and Telegraph Estimates was Colonel Reitz's announcement that in the current year no less a sum than £500,000 will be applied for telephone development in the Union. It is notorious that, although South Africa can boast of being perhaps the best telephoned country in the world in proportion to population, there was some time ago a tendency to rest on the laurels of the past, and to subordinate the urgent needs of trade and agriculture to the insistent demand of the Treasury for economy. The demand for economy was thoroughly intelligible, but telephones are a productive asset, and this fact has happily now been recognised by the Government.

* * *

Luipaardsvlei.

During the period April 24 to May 31, 13,915 tons were crushed for an estimated result of £11,539. Total working expenses, £22,866. Sundry revenue, £1,500. An official note states that during the strike preparations were made for closing down, and the native force was disbanded. Upon the termination of the strike mining and crushing were resumed. The abnormal results during the above period are due to low tonnage, caused by the inexperience of the newly recruited natives, and to the heavy absorption of gold in the plant, consequent upon a very thorough clean-up having been made during the strike period. Nearly the full complement of natives has now been secured, and it is expected to crush to the full capacity of the mill during the current month.

* * *

Robinson Deep Prospects.

A Johannesburg broker, usually of a very cautious turn of mind, sent the following cabled reply to a London inquiry as to local opinion of Robinson Deep prospects:—"Robinson Deep 'A' I consider a fair purchase at about the present price. The position must show great improvement on account of lower working costs, after taking into consideration reduction in gold premium. Capital expenditure on programme and repayment of debt should be completed out of the profits by end of 1923. The company should then commence to pay off arrears of cumulative dividends on 'A' shares, amounting to 22s. per share." The second phrase of the above cable reflects, by the way, the best informed opinion as to most of the Rand's big low-grade producers. To such properties especially savings in working costs mean more than fluctuations in the gold premium.

* * *

Ex-Enemy Shares.

The Custodian of Enemy Property states that certificates of credit issued by him under legislation made in the Union in execution of the treaties of peace will in future be transferable and negotiable in like manner to other Union Government stocks, and the necessary legislative authority for this change is contained in Proclamation No. 99 of 1922, published in the current *Gazette*. Previously these certificates were not negotiable or transferable for a period of five years from the date of issue.

Letters to the Editor.

ALLUVIAL GOLD RECOVERY PLANT.

To the Editor, *S.A. Mining and Engineering Journal.*

Sir,—Could you kindly give me some information on the following? A friend and I are thinking of going up to the Pietersburg alluvial gold diggings. Now, there is quite a big percentage of black sand in the gravel. Could you tell me of some cheap shaking table on the market for catching the black sand, or of some other method which would be equally suitable? Thanking you in anticipation.—Yours, etc.,

MINER

Box 1, Knights,
July 8th, 1922.

THE BRITISH SOUTH AFRICAN EXPLOSIVES COMPANY, LIMITED.

To the Editor, *S.A. Mining and Engineering Journal*

Sir,—On page 1506 of your issue of 8th July, under the heading of "Notes and News," appears a short summary regarding this company, and we wish to point out that the statement regarding assets amounting to £296,444 is not correct. The figure stated represents the cash at bank and in hand, and debtors. The total assets as appearing on the balance sheet amount to £1,360,349.—Yours, etc.,

THE BRITISH SOUTH AFRICAN EXPLOSIVES CO., LTD.,
JOHN HUNGERFORD.

Johannesburg,
10th July, 1922.

[The figures we quoted were those issued by the London office of the company.—Ed., *S.A.M. & E.J.*]

THE JOINT COUNCIL OF EUROPEANS & NATIVES.

To the Editor, *S.A. Mining and Engineering Journal.*

Sir,—By chance I happened to-day upon a copy of your issue of 17th June last, and on page 1392, in your *resumé* of the memorandum submitted to the Mining Industry Board in the name of the Joint Council of Europeans and Natives, I read: "The names of the following Europeans are appended to the statement." Among those names is my own. Permit me to say that this is an error. I am a member of the Joint Council, as I am in general sympathy with its declared aims and objects. These do not pledge the members to any opinion or policy on the various questions dealt with in the memorandum. Owing to my absence from Johannesburg I have not attended a meeting of the Council for over six months, and I did not read the memorandum in question until it appeared in the Press. I had no part in framing or approving it, nor is my name appended to it. The inference that all members of the Joint Council necessarily subscribe to all the views expressed in the memorandum is unwarranted; in the case of myself, I can add that it is wrong.

Yours faithfully,

J. A. HAMILTON

July 5, 1922.

AN APPRECIATION OF MR. SCOTT ALEXANDER.

To the Editor, *S.A. Mining and Engineering Journal.*

Sir,—I have often heard Mr. Scott Alexander make the remark, "Tell me how long it takes to build up a five-mile-thick geological age, and I will tell you the age of the earth." Well, the other day I read a paragraph in which it stated that the U.S.A. Geological Survey had computed that one inch of surface of the United States was denuded during a period of 760 years. That was the mean figure arrived at as between mountainous country and the plains. Therefore, if the building-up process in one place is equal to the denudation in another, and if the climatic conditions throughout the ages did not vary too much, then a five-mile-thick age would take, or did take, 240,768,000 years to build up. It would not be unreasonable to knock off the 40 odd million years to compensate for igneous sheets which by their occurrence would hasten the building-up process.

Mr. Scott Alexander says there are three auriferous ages peculiar to this country. Then there is the older shistose age, common also to the rest of the world, and our carboniferous and younger formations, such as the cretaceous which fringes some of our coasts. What thickness he assigns to these I don't know, nor into how many five-mile ages he divides the geological systems of the Northern Hemisphere. When speaking of the age of the earth I presume Mr. Alexander means from the time it became *terra firma*, and not from the time, as the Bible so tersely puts it, "The earth was void and without form," or even from a later age, when the influence of cohesion was more apparent and the earth was in a plastic state. I know Mr. Alexander is not fond of theories in science, as they are apt to lead one into a field of romance, but where would an astronomer be without a theory?—as, for instance, it is said that the moon was at one time part and parcel of the earth, from which it flew off at a tangent, say, during the plastic age. If this is probable, then it is also logical to say that the whole of our planetary system could have flown off from time to time from the sun, including their moons, only that the latter did so coincident as to time when the particular planets (to whose sway they each conform) parted from the sun's mass. One can also argue that previous to this partial disintegration of the sun he was himself ejected from Hercules, and, following the example of the prodigal son, he is now returning home. The parallel ceases there, as the prodigal son did not drag a family along with him on his return journey. It is, of course, just as easy to argue that the foregoing is all bunkum. But to return to the subject of Mr. Alexander. Our old friend in his contributions to your widely-read paper often indulges in a tilt at his brother-geologists because they apply the knowledge of geology gained in the Northern Hemisphere, with its many highly fossilised systems, to our older pre-fossil ages.

I fancy they could reply *et tuo quoque*, because, unless I am mistaken, Mr. Alexander studied geology under Herr Richter, the professor of this branch of science at Bonn University, and as he also made his home with this famous *savant*, he probably had to conform to the German thoroughness in his studies. Mark Twain said that the German student was not content to build up a solid edifice of learning, but added a steeple to it by taking a post-graduate course in some particular subject.

In the same way, Mr. Scott Alexander's arduous and exhaustive study of what he terms the exact branch of geology, viz., stratigraphy, is no doubt the imposing steeple he has added (here) to the foundation of the science he acquired at Germany's most aristocratic university. According to the scale of time as given herein, two reefs in the same series separated by, say, 110 feet of country rock would represent a difference of over a million years in time, hence when Mr. Alexander deems that the reefs of one five mile geological age are often correlated with that of another, or again, when they speak of *the* dolomites, little realising the immensity of the period which separates the deposition of the Lydenburg dolomites from those found in our most recent auriferous formation, the Black Reef age; one can only wonder that his denunciations of the transgressors are not fiercer. Those, however, who are privileged to his intimate friendship, know that the thunders of this geological Jove are only those of scorn, hurled at the errors (not the persons) of the lesser geological gods. We all know that there lives no more kindly and punctiliously polite gentleman than our highly esteemed stratigraphist.—Yours, etc.,

B. E.

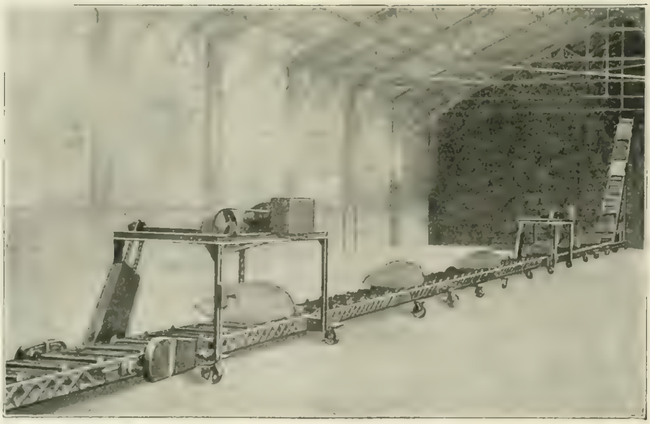
Goldfields Preference Dividend.

The Consolidated Gold Fields announce that the dividend on the first preference shares, which was postponed from July 1, will be paid on August 16.

A SULLIVAN COAL AND COST CUTTER

MADE BY THE SULLIVAN MACHINERY COMPANY

THIS IS
A BROWN PORTABLE INSTALLATION — NOTE THE PORTABILITY



MADE BY THE BROWN PORTABLE CONVEYING MACHINERY COMPANY,

FOR FURTHER PARTICULARS APPLY TO: –

THOMAS BARLOW & SONS (S.A.) LTD.

DURBAN.
P.O. Box 1011. Tel. Add.: "SHIPMENTS."
'Phones : .. .. 1, 1965, 2322, 2460.

JOHANNESBURG.
P.O. Box 6901. Tel. Add.: "SHIPMENTS."
'Phone .. .. 6503.

The Week in the Sharemarket.

A STEADIER TENDENCY AFTER PROFIT-TAKING DIAMONDS BETTER—CHEAPER MONEY.

The forced selling referred to in our last week's issue has somewhat subsided, and the market—both London and local—shows distinct signs of steadying. There are undoubtedly quite a number of time-bargains falling due in the near future which will have to be satisfied by selling or financial arrangement. In the meantime, as far as we can gather, a mixture of selling and buying orders is continually coming through from London, which is liable to create a phase of irregularity. The recent slight improvement in the price of the German mark has evidently assisted the steadying of the market. In our last issue we predicted fluctuations, but we would again point out that we have no reason to alter our belief that between now and the end of the year a more active market and high prices may be looked for. At the time of writing (Thursday) we are informed that De Beers were rather better in London at £11 10s. buyers last night. This shows an increase of 7s. 6d. on the last price cabled—an encouraging feature—and we are still optimistic of an upward trend in this section of the market within the next few months. Restricted finance is still hampering a larger volume of local business, but we do not think the position is quite as serious as one is led to believe. The buying from London, although detrimental to the banks, has in many cases improved the position of private parties and firms; and, although some of these may not be willing to purchase stocks outright, they may at the same time find a very lucrative business in loaning their spare money against scrip of undoubted security and with a fair margin. This form of temporary loan—thoroughly secured—would undoubtedly relieve the present stringency, and at the same time prove beneficial to the lender, borrower, and to trade conditions generally. The Bank rate has been reduced to 3 per cent.—the lowest since 1914.

	Fri. 7th.	Sat. 8th.	Mon. 10th.	Tues. 11th.	Wed. 12th.	Thurs. 13th.
Anglo Amer. Corp.	21 9	20 9	21 3	20 9*	21 0*	20 9*
Apex Mines		6 0*	6 0*	6 6	6 6*	6 9*
Aurora Wests	4 6*		4 3*		4 0*	
Brakpan Mines	50 0*		50 6*	48 6	50 0†	48 3*
British South Africa					11 0*	
Bushveld Tins	0 5*	0 6*	0 6*	0 7*	0 7*	0 5*
Cinderella Cons.	3 0†	2 6*		2 6*		2 7*
City and Suburban	2 2*	3 2*		2 2	2 2*	2 2*
City Deeps	48 0†	48 0†	48 0†	46 6	45 0	46 0*
Clydesdale Collieries	19 6†				18 0*	18 0*
Con. Diamonds	16 6	16 0	15 9	15 7½	16 0*	16 0*
Con. Investments					25 6†	
Con. Langlaagtes	14 0*			14 6*	14 0	
Con. Main Reefs	10 10*	11 0	11 3	11 1½	11 3	11 0
Con. Mines Selection	13 6*	14 0			13 9	
Coronation Collieries					32 6*	36 0†
Coronation Freeholds	1 0†	—	0 10*	0 10*	0 10*	
Coronation Syndicates		4 6*	4 6	4 6*	4 3*	4 4*
Crown Diamonds	6 1	5 10*	5 9*	5 11*	5 10	5 10
Crown Mines	42 6*	41 3*	41 0*		42 6†	41 0*
Daggafontein Mines	3 1*	3 1*	3 3*	3 3*	3 4	3 1*
East Rand Coals				1 6	1 6†	1 6†
East Rand Deeps	0 9		0 9*	0 9*	0 9*	0 9*
East Rand Minings						11 6†
East Rand Props.	8 0	7 6*	7 6*	7 0*	7 4*	7 3
Eastern Golds		0 6*	0 7*	0 6*	0 6*	0 6*
Ferreira Deeps		7 0*	7 3*			
Frank Smith Diam.	3 9	3 9*	3 9	3 6	3 1	3 6
Geduld Props.	64 0*	62 6	62 6	62 0	62 0	62 3
Glynn's Lydenburgs	14 0*					
Government Areas	97 0	94 0*	96 0	94 0*	94 0	94 6*
Hume Pipes	13 6*	15 0†	13 0	12 6*	14 0*	14 0*
Knight Centrals	4 0*	4 0*	4 2*	4 0	4 0*	4 [illegible]
Lace Props.	8 9*	—	8 0*		8 6*	
Leeuwpoort Tins	5 0*	4 9*	4 9*	4 9*	5 0*	5 0*
Luipaardsvlei Est.				1 6*	1 3*	
Lydenburg Farms	4 3†		4 0†	4 0*	3 7*	3 6*
Meyer and Charltons	72 6†			70 0†		
Middelvlei Estates	1 9†	1 6†	1 6†	1 3*	1 6†	1 [illegible]
Modder B's	34 3	33 9	33 9*	33 9	33 9	34 3
Modder Deeps	43 3	43 6	44 0	43 0	43 0	43 3
Modder Easts	8 0	7 9*	7 9	7 8	7 6*	7 8*
Natal Nav. Coll.		30 9†	31 0†			
National Banks				£11*		£11*
New Eland. Diam.	34 0*	32 0*	32 0*	31 6*	31 6*	31 6*
New Era Cons.	6 0	6 3*	6 3*	6 1*	6 3*	6 3*
New Geduld Deeps		1 3*	1 6*	1 6*	1 6*	1 6*
New Kleinfonteins	7 0*	6 10	6 6*	6 6*	6 9	6 6*
New Modderfontein	77 6	75 9	76 3*	75 0	75 3*	76 0
New Primrose	2 6†		1 6*			1 6*
New Uniteds	3 9					3 6*
New State Areas	33 3	32 0*	31 0†	32 9	32 9	32 6*
Nigels	5 0	5 0*	5 0*			
Nourse Mines	16 4	15 6*	16 0	15 9	15 9	15 9*
Pretoria Cements	13 9	13 3*	13 0*	13 0*	13 3	14 0*
Rand Collieries			0 9*			
Rand Nucleus	1 1*			1 0		1 0*
Randfontein Estates	18 3	17 6	18 0	17 3*	17 9	17 9*
Rouxville Diamonds	1 0*		1 3*	1 3*	1 4*	1 4
Roberts Victors	8 3*	8 6	8 6*	8 0*	8 0*	
Roodebergs	3 0*	3 1*	3 0*	3 1*	3 0*	3 0*
Ryan Nigels	1 0†	1 0†	1 0†			1 0†
Rose Deeps	11 6*					12 6*
Simmer and Jacks	3 11	3 9	3 10	3 10	3 11*	4 1
S.A. Lands		4 6†	4 6†	4 5†	4 2*	4 0*
Springs Mines	15 9*	14 9	15 9	13 9*	13 6	13 9
Sub Nigels	12 9*	12 0*	12 0		12 3*	12 6*
Swaziland Tins	5 0*	5 0*	5 0*	5 0		5 0*
S.A. Alkali	17 0	16 9†	17 6†	16 9†	16 6†	15 3*
S.A. Townships		10 0†	10 0†			9 3
Trans. G.M. Estates				11 9†	12 0†	
Transvaal Silvers	13 0*	13 6†	13 0*	12 0	12 0†	11 3*
Tudors		0 10†	0 10†	0 10†		0 10†
Van Dyk	1 0†	0 9*	0 10*			0 9*
Van Ryn Deeps	72 6	70 9*	70 9*	69 0	68 9*	69 0*
Village Deeps	11 3	11 3*	11 3*	11 3*	11 3*	11 9*
West Springs	12 3	11 10½	12 6	11 10½	12 5	12 7
Welgedacht				11 0*		
West Rand Cons.		5 0		5 0		5 3
Western Rand Est.		3 9*		4 0*	4 0*	4 0*
Witbank Collieries	40 0†	39 6†	39 0†	39 0†	39 0†	—
Witwatersrands		12 0*	12 7½	12 6*	12 6	
Wit. Deeps	11 0	11 0*	11 0*	11 3*	11 6*	11 3*
Zaaplaats Tins	1 9*	1 6*	1 6*	1 6*	1 6*	1 6*
Union 5 per cent.	£101¼*	£101¼*	£101¼*	£101¼	£101*	£101*

* Buyers. † Sellers. a. Odd lots. b. Ex London.

Mining Men and Matters.

Mr. Dugald Tullis is leaving by the "Arundel Castle" on a six months' business trip to Europe and America.

* * *

His many friends will be glad to hear that Mr. James Neilson has recovered from his recent indisposition.

* * *

Mr. Maurice Brown, iron and steel merchant, director of the Newcastle Iron and Steel Works, the African Iron and Steel Products, Ltd., etc., etc., is leaving for a trip to the Old Country by the "Arundel Castle" on 21st inst. The trip, which is partly for business and partly for pleasure, will it is understood be extended to the Continent and America.

* * *

Mr. J. H. Vivian, for so many years connected with Messrs. Fraser & Chalmers (S.A.), Ltd., is now operating on his own account under the style of J. H. Vivian & Co., at 33 to 35 General Mining Buildings (Phone 6630). The new firm holds the agency for Goodrich conveyor and transmission belts, Goodrich air and water hoses, complete supplies of which are due to arrive shortly. Messrs. J. H. Vivian & Co. also represent the Victoria Engineering Works, Box 32, 'Phone 34, Brakpan.

TRANSVAAL SILVER AND BASE METALS, LTD.

The output of this company for June totalled 396·3 long tons of lead bullion, containing 39,281 ounces of fine silver, representing a total value, at to-day's prices of the metals, of approximately £15,650.

To Lower your Operating Costs:

A Lubrication Audit

Business to-day protects itself against waste and inefficient methods——by audit.

An audit gives an exact picture of present conditions, and points the way to improvement.

We would like to call to your attention the possibilities of a Lubrication Audit in your plant.

See details in column.

Only a Lubrication Audit can give you full information, and open the way to new economies which will soon be reflected in lower operating costs.

Present industrial conditions make it urgent that you take this step toward improved results at once. Ask our nearest branch to-day about the Lubrication Audit.

GARGOYLE

Lubricants

A grade for each type of service

THE LUBRICATION AUDIT

Explained Step by Step (in condensed outline)

INSPECTION: A thoroughly experienced Vacum Oil Company of S.A. Limited, representative in co-operation with your plant engineer or superintendent makes a careful survey and record of your mechanical equipment and operating conditions.

RECOMMENDATIONS:—We later specify in a written report, the correct oil and the correct application of the oil for the efficient and economical operation of each engine and machine. This report is based on:—

(1). The inspection of the machines in your plant.
(2). Your operating conditions.
(3). Our 25 years of lubricating experience with all types of mechanical equipment under all kinds of operating conditions.
(4). The outstanding experience of the Vacuum Oil Company in manufacturing oils for every lubricating need.

CHECKING:—If, following our recommendations in this audit, you instal our oils, periodical calls will be made to check up the continuance of the desired results.
For the above Free Service address our nearest branch office.

BRANCH OFFICES:

Cape Town **Johannesburg** **Pretoria**
Kimberley **Bloemfontein** **Mossel Bay**
Port Elizabeth **East London** **Durban**
Lourenco Marques.

VACUUM OIL COMPANY OF SOUTH AFRICA, LTD.

STANDARD BANK
OF SOUTH AFRICA, LIMITED.
(With which is incorporated the African Banking Corporation, Ltd.)

Established 1862.

Authorised Capital	**£10,000,000**
Subscribed Capital	**£8,916,660**
Paid-up Capital	**£2,229,165**
Reserve Fund	**£2,893,335**

GENERAL BANKING BUSINESS transacted at all Branches and Agencies; DEPOSIT and CURRENT ACCOUNTS opened; PURCHASE and SALE of INVESTMENT SECURITIES effected, etc.

SAVINGS BANK ACCOUNTS opened on terms, particulars of which may be obtained on application.

The BANK is in close touch with TRADE and INDUSTRIAL CONDITIONS, both local and overseas, and special attention is given to COMMERCIAL ENQUIRIES from customers.

EXECUTOR and TRUSTEE business undertaken.

Over 380 Branches and Agencies in Africa.

Agents and Correspondents throughout the World.

ROBINS CONVEYOR PULLEYS

¶ Conveyor Pulleys must be of special design because of their slow speed of rotation and the consequent heavy strain on the end pulleys.

¶ Robins Conveyor Pulleys are the product of careful thought and long experience in design and manufacture.

¶ All pulleys are cast in one piece of the best grey iron to eliminate the breaking of shafts and pulleys when pulleys made sectionally and bolted together are used.

¶ The arms and rims are heavily ribbed, thus allowing a proper flow of metal in pouring, to prevent shrinkage strains.

¶ The rims are finished with extra high crowns.

¶ Standard sizes of End, Bend, and Snub Pulleys carried in South African Stock for prompt delivery

Robins Conveyors (S.A.), Ltd.
(Head Office: Robins Conveying Belt Co., New York, U.S.A.)
BOX 4736, 'PHONE 4182, JOHANNESBURG
BOX 811, 'PHONE 3383, DURBAN

ENGINEERING SECTION.

Views on the Electricity Bill.

EVIDENCE OF THE CHAMBER OF MINES, GENERAL MANAGER OF RAILWAYS, MUNICIPAL AUTHORITIES AND V.F.P.

Before the Select Committee on the Electricity Bill, many experts and public bodies recently gave evidence. On behalf of the Capetown Corporation, Mr. Coldicott Gardener, the Mayor, stated that one of the main points was that an independent Board should be appointed, it being felt that a Board composed entirely of officers of the South African Railways and Harbours Administration would not command the same confidence as one constituted of persons independent of the Public Service or Railway Administration. Another point was that Capetown had always enjoyed absolute autonomy in the matter of the supplying of electric current, and it was felt that it might look to the Select Committee with confidence to see that it was protected under the Bill. It was therefore asked that there might be no limit of 10 per cent. imposed on the city in regard to future extensions.

Case for Chamber of Mines.

Messrs. Elsden-Dew & Clayden submitted the following statement on behalf of the Transvaal Chamber of Mines:—

" In the opinion of the Chamber it is to be regretted that sufficient time has not been afforded for a more detailed consideration of this Bill, as it is designed to settle for the Union the fundamental principles for the promotion and control of the supply and use of electrical power. It will be recalled that when the Electricity Bill of 1921 was first mooted, instructions were given to the drafting committee to frame the Bill on the lines of the Electricity (Supply) Act 1919 (Great Britain), as recommended by Messrs. Merz and McLellan. The drafting committee did not follow this recommendation, though it was claimed at the time by experts and others interested that certain important principles embodied in the British Act would be incorporated in any similar legislation for this country. When the Chamber had the opportunity to put forward its views, it clearly stated that in principle it would welcome an Act framed in accordance with the terms of reference to the original drafting committee, and it now reaffirms this opinion with reference to the Bill under consideration. A study of the present Bill shows that it materially diverges from the Electricity (Supply) Act, 1919 (Great Britain). Messrs. Merz and McLellan, in their report, say:—

" ' Many provisions of the British Act are not applicable to South Africa at the present time, where electric supply, except in one or two cases, is at a very early stage of development. Further legislation in South Africa is however required, and so far as the appointment of Electricity Commissioners is concerned, this may well follow the British model. If such a body of Commissioners were created it would naturally be the authority under the Act for dealing with the various matters referred to above.'

" In the Electricity (Supply) Act, 1919 (Great Britain) the Board of Electricity Commissioners (corresponding to the Electricity Control Board under the draft Bill) is an independent body, and the personnel of such a body must carry the confidence of the public, its decisions being free from political considerations. In the opinion of the Chamber it is essential that this important principle should be clearly incorporated in the Act."

Sir W. Hoy's Evidence.

Sir William Hoy, examined, said he had given this matter much thought for a number of years. For seven or eight years he had been thinking deeply upon the question of changing the means of transportation, because conditions were changing here and progressing yearly. There were certain services which were essential, and should be publicly controlled. Transportation, generation of power and certain municipal services should be provided for the public benefit and public welfare, and should be under public control. No individual should make a profit from such services. He thought that the Railways and Harbours Department would be a suitable department for supplying power, but the opinion he had formed from the national point of view was the advisability of the development where possible of the policy they had hitherto followed, that is to say, in public requirements with regard to certain services he preferred to unite with municipalities in the development of that idea, and create a wider demand and a more economic supply. Railway electrification had introduced changed conditions, and he would prefer to see power for railway purposes generated through some specific authority. He did not think the Railway Administration itself should be that authority. They could do it, but he thought it would be better done by a body which could give its undivided attention to that sphere of work. If the railway were undertaking that work for itself, he would not go so far as to prohibit it from supplying other consumers. They did supply certain small municipalities now, and did it as a matter of economy to the municipality and themselves—both benefited; but that was a feature that he did not care to develop in a large way. Their business was rather that of transportation.

Mr. B. Price's Views.

Mr. Bernard Price, chief engineer of the Victoria Falls Power Co., handed in a written statement in which he said that the V.F.P. sold more than 800 million units of electrical energy and compressed air annually to the gold mining industry, municipalities and other industrial concerns on the Rand.

It will be clear, Mr. Price stated, that legislation was required (a) to co-ordinate the development of power supply throughout the Union with a view to standardisation of the form in which the energy is supplied, regulation of prices and control of other terms and conditions under which the supply is given; (b) to investigate the position in regard to power supply in the various districts and areas of the Union with a view to determining which of the possible alternative means of development is in the first interests of consumers; (c) to issue licences or to sanction in any other manner the establishment and control of power supply undertakings when approved by the Government.

The Government Scheme.

In objecting to [illegible] the first and third [illegible] the [illegible] Bill sets up a Government appointed commission not only to investigate and recommend but to apply for a licence to itself establish, acquire and operate such undertakings. [illegible] Mr. Price pointed out, would not be an impartial body. The first and most important [illegible] of the Bill was that it [illegible] the door to private [illegible] While an attempt has been made to give the commission an independent complexion, there can be no doubt that in practice it will be very directly subject to political influence."

In America the tendency is overwhelmingly in favour of private enterprise. Experienced gained in belligerent countries during the war had not influenced public opinion in favour of nationalisation, but the reverse. . . . It may be pointed out, however, " that it is by no means certain that either out-and-out public enterprise or out-and-out private enterprise is the best solution. In some cases, a combination of public ownership with private operation or a combination of local interests, both public and private, may prove the best scheme and, for such, there is no provision in the bill."

Protecting the Consumer.

Mr. Price went on to point out that it was necessary that the consumer should be protected from abuse at the hands of a private undertaking, but that the commission established under the Bill would enjoy an unrestricted monopoly inasmuch as it was given entire freedom in the fixing of the prices to any particular consumer. " Should the commission in any year incur a loss, there is nothing to prevent it from placing the burden of that loss on any section of the consumer for the benefit of the others."

It was hoped that the Bill would be altered so as to protect consumers against unfair discrimination and that the question would be considered in connection with municipal undertakings which are equally liable to abuse for political ends.

Mr. Price concluded by asking why the Government was embarking on an enterprise of this nature? If the answer was that the Railway Department was averse to taking supply except from a Government undertaking, it should be remembered that many much larger and more important railways in other parts of the world were entirely dependent on private enterprise. In its present form, the Bill would discourage private enterprise and, under the circumstances, Parliament should come to no hasty decision. If in the Bill it was made perfectly clear that the commission and private enterprise would be exactly on the same footing from the beginning to end, said Mr. Price in conclusion, " I do not think there would be much more to be asked for."

New Coin-making Machines.

It is an interesting fact that almost every Government in the world employs British-made coining presses in its mint. Recently the French Government installed a set of fourteen presses of British make for the minting of nickel bronze coins to replace the two franc, one franc, and half franc notes which have been used during the war. These new presses are constructed to work at a high speed and are capable of turning out one hundred finished coins per minute. The presses are automatically fed with blanks of metal from a hopper and should the supply of metal fail from any cause they stop automatically, thus preventing the dies being injured.

British Empire Exhibition, 1924.

Preparations are actively going forward for the great exhibition which will be held near London, England, during 1924. The task of organising the shipbuilding, marine, mechanical and general engineering sections of the exhibition, which will form quite the most magnificent display of British engineering triumphs, has been placed in the hands of the British Engineers' Association. This Association will allot space to the various branches of British engineering and will ensure that the exhibits will be representative of the best modern practice in British engineering.

The Rapid Making of Gears.

Nothing is more striking in recent engineering progress than the development of highly efficient gearing. This development has involved the construction of many wonderful machines for cutting gears rapidly and with extreme accuracy. One of the difficulties of gear cutting is that so much time has to be occupied merely in cutting away large chunks of metal before the final and careful trimming of the gear is possible. In order to get over this difficulty British engineers have developed machines for gashing out, as it were, the main mass of metal between the teeth of the gear. Heavy cuts of metal are therefore made with great rapidity, and the final process of forming the gear is rendered both easy and swift. A British firm recently produced an improved machine on this system to deal with gear wheels up to three feet in diameter; and it is now constructing much larger machines. The special feature of these machines is the use of two cutters, one cutting on the front only and the other cutting on the sides. In this way three distinct and separate cuts are produced, and the metal comes away with exceptional freedom. The heavy roughing out cuts and the lighter gear-shaping cuts can, in fact, be performed at one and the same time.

NEW PUBLIC WORKS.

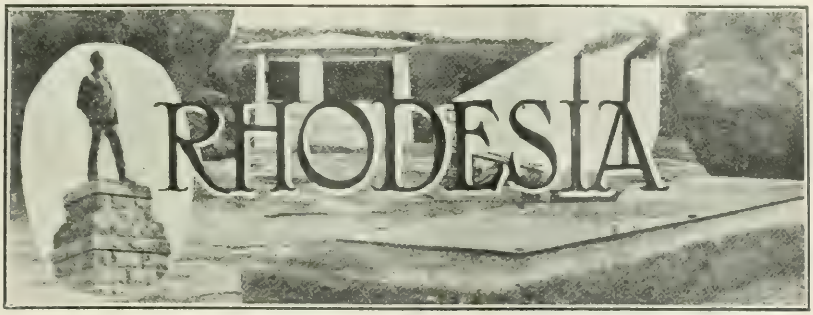
The following are the different items which make up the total expenditure of £10,963,000 which the Government proposes to defray from loan funds during the current financial year:—

Railways and Harbours, £4,800,000; Public Works, £686,000; Agriculture and Agricultural Schools Account, £82,966. Of this total mainly on account of the Faculty of Veterinary Science at Onderstepoort, the Magistrate's Office and Public Buildings at Capetown for £70,000, the Police Department for £30,676, Post and Telegraphs for £54,995, mental hospitals and leper institutions for £198,790, of which £100,000 is for the purchase of defence endowment property, and the Pretoria Mint for £68,500. Telegraphs and Telephones, £500,000; Lands and Settlements, £450,000. Irrigation £1,200,000 (including £792,100 for irrigation loans), local works and loans £2,106,000 (including £1,050,000 loans to Provinces and South-West Territory), on account of capital expenditure, £720,000. Housing Loans Fund, £135,000; Loans to Universities and Colleges, £150,000; Unemployment expenditure (Land and Agricultural Bank), £300,000; Forestry, £300,000 (including £109,363 as unemployment relief); Native Affairs, £2,000; Defence, £94,000; Post War expenditure, £125,000. Special advances to Provincial Administrations £400,000 (special advances to the Cape and Transvaal towards meeting their deficits).

There is also a further sum of £212,000 to be devoted on account of the defence endowment account, comprising the purchase of war debt property £150,262, and general defence works £61,738.

Supplementary estimates were also tabled by Mr. Burton in the House of Assembly to the amount of £326,530. The principal items are £11,000 for the Capetown-Durban mail-boat service, £15,000 for miners' phthisis, £21,000 for a grant in aid of the Durban Technical College, £12,100; a similar grant to the Capetown Technical Institute, and £225,000 for expenditure in connection with the industrial disturbances. The estimates of expenditure of the South African Railways and Harbours for the current financial year on capital and betterment total £7,269,186 under the heading of " New Programme 1922-23," made up as follows:—

Construction of railways, £500,000; new works on open lines, £2,247,970; rolling stock, £15,400; harbours, £710,263; working capital, £32,660; unforeseen works, £100,000. The incidence of expenditure during the year totals £5,196,000, comprising the following items:—Purchase of Hlobane railway, £100,000; construction of railways, £500,000, new works on open lines, £3,038,887; rolling stock, £309,905; harbours, £1,246,261; working capital, £35,758; unforeseen works, £65,089.



Present Position of the Shamva.

A BRIEF NOTE BY A SPECIAL CORRESPONDENT.

The Shamva Mine in the Salisbury district is looking better than ever at present and the property continues easily to rank as the leading gold producer of the country. The mine has paid substantial dividends and distributed immense amounts in respect of working costs and capital expenditure. It has, in fact, proved itself the mainstay of Eastern Machonaland, and it has all been done on 3½ dwt. ore. The latest estimate as to the ore reserves of the mine is 2,633,000 tons of an average assay value of 3·5 dwt. per ton, and at the time of writing the actual value of the ore which is being mined and treated is approximately 3⅓ dwt. per ton.

The Shamva Mine—a unique view of the Reduction Works, taken from the famous gold-bearing Shamva Mountain.

There are in the Shamva Hill two ore bodies known as the main ore body and the south parallel. In character these gold carriers have an east and west strike, and the main body has been opened up over a distance of approximately 5,000 feet. At one point the lode is quite 400 feet wide and it is probable that further development will prove an even greater width than this; in fact, the indications are that a solid body of ore 600 feet or more in width is at one point at least available for attack.

The Shamva gold carrier behaves in a somewhat different manner, so far as content is concerned, to the general run of auriferous lodes and veins. It is a fact worthy of remark that in the Shamva mine the best values invariably are secured where the lode is widest. It may also be recorded that the best values are generally associated with the hardest type of blue rock and where gulleys come into the hill the values generally speaking are poor.

Development is now proceeding on the 7th level, which is 1,120 feet below the top of the hill. In order to attack the ore lying below ground level at the bottom of the kopje it will probably be necessary to sink an incline shaft into the base of the hill. This may have some effect on working costs of the future, as obviously the tendency must be for expenditure to increase as more ore has to be hauled to surface and less ore is secured by gravitation from the working faces up in this gold-bearing mountain down to the mill and treatment site. But with a comparatively flat incline costs should continue to be maintained at a very low level and there is every reason for believing that the Shamva will continue to be a profitable Rhodesian Alaska-Treadwell for a good many years to come.

The reduction and treatment plant at the Shamva consists of 64 Nissen stamps and 12 tube mills. The ore is coarse crushed in the battery house in cyanide solution, the measure of screening employed being ½ inch.

PIT HEAD PULLEYS

GIMSON Pit Head Pulleys are built right to serve right. They consist of cast iron rims and bosses, securely cast on to wrought iron round arms. The bosses are strengthened with steel rings, shrunk on each side, and are truly bored and keywayed. They can be supplied from stock, with either U or V shaped grooves. Particulars of sizes, etc., will be gladly sent on request.

Sole Agents for South Africa:

BARTLE & COMPANY, LTD.

Loveday House Box 2466 Wires: "FAGGOT" Johannesburg

And at Box 444, Kimberley —— And at Box 1228, Durban

USE

"PORPOISE"

BRAND

ANTIFRICTION GREASE

Used for years by the majority of Mines all over South Africa.

Manufactured by

South African Lubricants & Chemical Works, Ltd.,

DURBAN & JOHANNESBURG.

Phone 1618, *Johannesburg Branch Office.*

£1,000,000,000.

In commemoration of the production in the Union of South Africa of minerals to the aggregate value of One thousand million pounds sterling,

The South African Mining and Engineering Journal

HAVE NOW IN PREPARATION A

SPECIAL YEAR BOOK FOR 1922-23.

Which will be a complete illustrated work of reference, containing all facts and figures relating to the South African Mining Industry, its technology and trade, and including valuable maps, diagrams, mine plans and statistical annexures, compiled by experts.

In 20 parts complete in one large and handsomely produced volume.

PRICE 10/6. POSTAGE 1/6 EXTRA.

Order early from the Publishers:

S.A. MINING & ENGINEERING JOURNAL,

176-180, Stock Exchange Building,

Telephone 913. P.O. Box 963.

JOHANNESBURG.

TRADE AND INDUSTRIES SECTION.

Week in the Mining Material and Engineering Trades.

BUSINESS QUIET BUT IMPROVEMENT LOOKED FOR WITHIN THREE MONTHS—IRON AND STEEL—TIMBER AND BUILDING MATERIALS—ELECTRICAL GOODS—UNION AND BRITISH COAL INDUSTRIES—JOHANNESBURG MUNICIPALITY STATISTICS AND ESTIMATES—VAAL RIVER RESERVOIR—INTER-IMPERIAL TRADE—INDUSTRY'S TAXATION BURDEN—METAL QUOTATIONS.

General.

Business during the week under review has undoubtedly been quiet and failed to reach that standard of improvement and activity which was generally anticipated would be witnessed about the present time. As mentioned some weeks ago, the commercial community was unduly optimistic after the removal of the labour trouble regarding the probable trend of business here, and discounted too heavily the effects which must necessarily result from such an unparalleled upheaval in our main industrial affairs. The tardy realisation of a general improvement in business based on such hopes is, however, in the opinion of shrewd judges, not altogether inexplicable. The total cessation of work for three months in the mining industry, with its corollary stoppage of commercial activity, the huge difficulties in connection with the resumption of work and gradual return to normal, were not sufficiently appreciated and allowed for. To shut down for a period of months such an industry as our gold mining industry is, of course, very different from closing down an ordinary business concern, which can be restarted almost at once. One of the chief causes of our failure to appreciate sufficiently the probable effects of such a dislocation was undoubtedly the omission in most calculations to allow sufficiently for the absence of ready money caused by the miners earning no wages during that period and the inability of the community as a whole to apply the multiplation table correctly in respect of the period which must necessarily elapse between earning powers and ability to spend, allowing for liabilities incurred during the strike period and the requisite resuscitation process. In other words, the spending power of the community, now very small, was over-estimated. But this notwithstanding, there can be no doubt that the gold mining industry is progressing extremely satisfactorily and beyond general expectations. Last month's gold output showed an increase of nearly 46,000 oz. over May, totalling 675,697 oz. and representing an increased value over May month of £3,125,099 and of 6d per oz. higher value owing to the swing of the gold premium. The most pleasing factor in the position, however, is that June month showed an increase over May of 15,000 in native labour returns, which means, roughly, that during that month some 1,500 white men were re-engaged. The very satisfactory increase of native labour points to a return to normal conditions within a few months and, with the Government's actual and contemplated development works, to a comparative slump in unemployment. A very important commercial man this week confirmed the general state of dulness through which Johannesburg is passing. He said things had not developed—had not come away with the celerity that was generally expected, but he thought that within two or three months we should see the improvement we were all looking for. He thought that about September we should see a decided betterment. At any rate, despite the present dull times, everything was pointing that way. Even the raising by the Town Council of £1,000,000, although probably most of the money was already ear-marked, was all to the good, as it must result in the spending of a certain portion of that sum in Johannesburg, and what we needed, and needed badly, at the present time was ready money. Prices, he said, showed little change. A very upsetting factor, however, in commercial circles here, as indeed throughout the world, was Germany's financial position, which was creating great uneasiness everywhere. Either things were going to improve or get worse in that respect, and in the meantime the state of suspense was, of course, not favourable to business. But, he concluded, it sometimes happen that when things look worst they are on the eve of improvement. An influential merchant said that things are undoubtedly quiet, the mines have only just completed their stocktaking and are only now preparing to order. Merchants generally, he said, are afraid to indent to-day in a falling or possibly falling market (latest cables, however, report an upward tendency), and he thought that some importers would wake up one morning to the fact that they had any number of orders and no stocks with which to complete them. The feature of the week has been the introduction in the House of Assembly, Capetown, by the Minister of Mines and Industries of a Bill to provide for the payment of bounties on iron and steel produced in the Union from ores mined therein. The measure is generally expected to be passed very shortly.

Iron and Steel.

On and outside the Commercial Exchange this week business has been of a very quiet character, and transactions have been confined to narrow limits. The mines appear to be still busy with their stocktaking operations; at any rate, nothing of any importance has to be recorded in the shape of either inquiries or orders. Merchants, notwithstanding, are in rather optimistic mood as to later requirements. The big thing is that the mines are gradually getting back to normal and that prospects in the near future are very satisfactory. Latest London cables state that prices in iron and steel have a tendency to advance. Certain lines, especially some sizes of steel plates, wrenches, hammer handles, etc., although perhaps not at the moment much in demand, are still scarce and are likely to enhance in value shortly.

Latest quotations.—Dunswart iron, 18s. to 23s. per 100 lb.; Union Steel Corporation, Limited, 19s. to 22s. 6d.; imported iron and steel, flats, rounds and squares, from 25s. 6d. to 35s.; channels and joists, 25s. to 28s.; imported angles, 22s. 6d. to 30s.; tee iron, 32s.; shafting, ⅜ in. down to 3-16 in., 7½d. to 9d. lb. ⅝ to 1½ in., 6½d.; 1¾ in. to 6 in., 4d.; steel plates, 1-16, ⅛, 3-16, 18s. 9d. to 21s. 6d.; 10 x 5 and larger, 25s.; ¼ to ¾, 21s.; spring steel, 7d. to 8½d. lb.; bolts and nuts, hexagon, ⅜, 7 5-16d. lb.; ½ in., ⅝ and ¾, 33s. 6d. to 47s. 6d. per 100 lb.; hexagon nuts, ⅜, 8½d.; ½ in., ⅝ and ¾, 7½d.; fish plate bolts and nuts, ⅜ in., 6d. lb.; ½ in, 4d. to 4¼d.; ⅝ in. and ¾ in., 3¾d.; dog spikes, 26s. 9d. to 27s. 9d. per 100 lb.; rivets, ¼ in., 6 5-16d.; ⅜ in., 5d.; ½ in and ⅝ in., 37s. 6d. to 40s. per 100 lb.; ¾ in., 50s.; brass rods, ¼ in. 1s. 5d.; ⅜ in, 1s. 3d.; ½ in. 1s. 2d.; ⅝ in. upwards, 1s. 1d. lb.; hexagon brass rods 1d. lb. extra; copper rods, ⅜ in. 2s.; ½ in. 1s. 11d.; ⅝ and upwards, 1s. 9d. lb.; tool steel, 2s. 11d. to 3s. 3d.; brass sheets, 1s. 10d. to 2s. lb.; copper sheets, ¼ in. to 18 gauge, 1s 10d. lb.; 20 gauge, 1s. 11d.; 22 gauge to 28 gauge, 2s. lb.; firebox copper, 2s. lb.; copper tubes, ¼ in., 3s. 3d.; ⅜ to ⅝ in., 2s. 6d.; ¾ to 4½ in., from 2s. to 2s. 4d. lb.; phosphor tin, 2s. 7d.; ingot tin (Lamb & Flag), 1s. 9d. lb.; ingot lead, £28 per ton; drill steel, 5½d.; hollow, 7d. to 8d.;

[illegible] 18s.; 36 in., 30s.; piping, ¾ in., black, 4¾d.; 1 in., 5¾d.; [illegible] 7d.; ¾ in. steam, 5¾.; 1 in., 8d.; 2 in., 1s. 6d.; linseed oil, 6s. 6d. to 7s. per Imp. gallon; white lead, 71s. [illegible] gauge, 19s. 6d. to 21s. per coil; plain galvanised fencing wires, No. 8 gauge, 100 lb. coils, 21s. 6d. per coil; No. 10 nauge, 100 lb. coils, 24s. 6d. per coil; No. 12 gauge, 100 lb. coils, 26s. 6d. per coil; bulb tee fencing standards, 14 lb., 19s. 6d. per dozen; 12 lb., 23s. 6d. per dozen; black baling wire, 14 gauge, 19s. per coil, 100 lb.; 12 gauge barbed wire, 22s. per coil, 96 lb.; plain wire, No. 8 galvanised, 21s. per coil, 100 lb.; fencing standards, 21s. for 12's and 24s. for 11's; droppers, 40s. per 100; screening, 3s. to 9s. 6d. per square yard; [illegible] per lb.

Union Steel Corporation (S.A.), Ltd.

This company reports that the 45 lb. rails which they have recently been producing and marketing have been exceptionally well received on all sides.

Engineering Shops.

These continue to be fairly well employed, but there is no big development in operations to report at present, although much is hoped for very soon.

Late British Engineering Strike.

It is estimated that the recent engineering strike in England cost the Amalgamated Engineering Union about £2,000,000, while its members have lost from £10,000,000 to £12,000,000 in wages.

Timber and Building Materials.

Timber merchants this week report that business, although fair, could have been better, that prices are still very firm at home and that probably an advance will be recorded as soon as new stocks of timber, expected within about a couple of months, arrive. Local prices, although firm, have not as yet advanced.

Timber prices.—3 x 9 deals, up to 18 teens 1s., over 18 teens, 1s. 1d.; scantlings, 10½d.; beaver boards, 4¼d. to 4½d.; floorings, 6d. to 6½d.; ceilings, 4¼d. to 4½d.; Oregon, 5s. 6d. a cube; pitch pine, 7s. 6d. to 8s.; corrugated iron, 7¾d. to 8⅝d. Furniture timber: Burmah teak, 12s. 9d. per cube at coast; American oak, 1 in., 10½d.; 1½ in., 11d.; 2 in., 11½d. at coast; Japanese oak, 11½d. at coast; West African mahogany, 1 in. to 4 in. thick, 26s. 9d. to 27s. 6d. per cube, at coast; Rhodesian mahogany, 9s. per cubic foot at mills; Honduras mahogany, 30s. per cubic foot; American yellow pine, 1s. 4d. per foot of 1 x 12 here; American pine shelving, 10d. per ft.; 3-ply wood, 3 m.m. up to 5 m.m., alder and birch, 4d. to 6½d. per sq. ft.; oak and teak, 3-ply, 10d. per sq. ft. Prices for bricks remain about the same, viz.: Klompje bricks, 25s. per 100 at works; fire-bricks, £10 per 1,000 at works; [illegible] pressed per 1,000, at kilns; columns from 20s. to 30s., according to size; roofing tiles, Marseilles, £25 per 1,000 at the works; chimney pots, 12 in., 7s. 6d.; 15 in., 9s.; 18 in., 10s. 6d.; [illegible] 16s. per 100 lbs.; white lime, 7s.; blue plaster lime, 5s. 3d.; blue lime, 4s. 3d.; cement, 10s. a bag; damp course and roofing, 36s., 54s., 55s. for 1 to 3-ply. Building operations are still quiescent, but an improvement is generally expected very shortly. Several large contracts, it is reported, are on the eve of [illegible]

Second-hand Iron and Timber.

Dealers have been quiet of late, but are still hopeful of good business within a few weeks. Stocks are scarce, the various yards presenting a barer appearance than for months past. Prices still remain about 6d. for iron and 8d. for timber.

Electrical Goods.

Things, said a leading electrical wares importer, appear to be a little better all round; there have been a lot of orders lately from the country—Kimberley, Rhodesia, etc. Prices generally, he said, are firming; everybody to-day is selling goods which cannot be replaced at present prices, but of course stocks have to be turned over and over, and above all, commitments have to be met. Germany seemed, he said, finished for the time. One cannot get stuff from her, at any rate not at the prices lately ruling. British prices are firming, too, and they were expected to advance locally within a short time. People who had been holding over their installations for lower levels seemed now, judging from inquiries, beginning to realise that prices would go no lower, but would rather advance and cost considerably more in about three months, and seem now about to rush in and get their jobs done cheaply. He said many owners of houses and business plans, who had been hanging on for months for still lower prices, were now realising that they would not be able to obtain electrical wares cheaper.

The Witbank Municipality is prepared to grant a concession for the right to supply electric light and power within the municipality, exclusive of mining and railway properties outside the township areas, for a period of ten years. Tenders to be received by the 17th August next.

Union's Coal Output—Strike's Effect.

Sir William Hoy, the General Manager of Railways, reports in his latest bulletin that the highest tonnage conveyed from the Transvaal mines during the year was in August, 1921, when it reached 612,466 tons. To illustrate the effect of the strike in February last, only 271,280 tons were despatched.

British Coal Industry.

Mr. Bridgeman (Secretary for Mines), in the House of Commons last week, stated that the export trade was improving, but the home trade was causing some anxiety. He offered to institute an inquiry by the Board of Trade whether some economy could not be effected in working costs. Meanwhile the Miners' Federation are approaching mine owners with a view to considering the serious situation on the coalfields.

It is reported from Berlin that Germany has suggested to the Reparations Commission that English instead of German coal be supplied for the coal deliveries which Germany is obliged to make to the Entente.

Johannesburg Municipality Statistics and Estimates.

In May, 1922, the number of separate buildings or tenements, the plans of which were approved by the Town Council, was 626, as against 477 in the corresponding month of last year, at an estimated cost of erection of £173,870 and £121,660 respectively. For the eleven months ended May 31, 1922, the total plans approved were 6,317, at an estimated cost of erection of £1,859,931, compared with the twelve months ended June 30, 1921, of 6,558 and £1,896,324.

Electricity: Johannesburg Municipal Statistics.

Description.	May 1920.	May 1921	May. 1922.	April. 1922.
No. of Units Generated at Works for Lighting and Power	2,409,803	2,671,819	2,730,973	2,251,543
No. of Units Generated at Works for Traction ...	553,983	1,085,105	1,160,058	1,073,578
Total Units Generated for Lighting, Power and Traction ...	2,963,786	3,756,924	3,891,031	3,325,121
Total No. of Connections at end of Month	21,365	22,364	23,043	22,986
No. of New Connections during Month ...	116	9	57	76

Gas.

Description.	May. 1920.	May. 1921.	May. 1922.	April. 1922.
No. of Cubic Feet Produced ...	6,049,347	6,580,410	7,571,011	6,719,611
Total No. of Connections at end of Month	558	590	613	603
No. of New Connections during Month ...	7 New. 3 Cuts-off.	13 New. 5 Cuts-off	18 New. 8 Cuts-off.	2 New. 9 Cuts-off.

Estimates, 1922-23.

Summary of estimated income and expenditure on revenue account:—

Estimated Deficit for 1921-22	£18,780
Estimated Ordinary Expenditure and provision for Extraordinary and Capital Expenditure	2,379,099
	£2,397,879
Estimated Income	2,390,514
Estimated Deficit	£7,365

Johannesburg Water Supply: Big Vaal River Reservoir.

The work in connection with the construction of storage works on the Vaal River, 22 miles from Vereeniging, to conserve a supply of water equal to a supply of 20 million gallons a day and to instal pumping plant and mains to deliver ten million gallons daily to the Rand, was started in July, 1916. It will be remembered that Parliament sanctioned the scheme in June, 1914, but owing to the war and the state of the money market precluding the raising of the necessary funds nothing could be done in connection with the proposal for some two years. In November, 1921, it was decided to obtain the 10 million gallons in two units of 5 million gallons each, and the work in connection with the first unit was started at an estimated cost of £1,525,000. Mr. Ingham, the chief engineer, reports that the work at the barrage is proceeding satisfactorily, and that the whole of the reinforced concrete work for the superstructure and balance boxes will be finished by the end of June. Six gates were in position on March 31 between the piers, and two open gates and two other main gates are ready for fixing. The length of the reservoir, according to the chief engineer's report, is 40 miles; contents, 13,633 million gallons; number of gates, 36; depth of water at gates, 25 ft. 1 in.; weight of gate and appurtenances, 100 tons; length of barrage, approximately 1,400 ft.

Inter-Imperial Trade.

Sir Joseph Cook, High Commissioner for Australia, at a luncheon at the Royal Colonial Institute, pleaded for stimulation of inter-Imperial trade as against foreign commitments. He pointed out that Britain's exports to Russia in 1913 were 3 per cent. of the total, and imports 5 per cent., while the corresponding figures for the Dominions were 37 and 34 per cent. The money (about 400 millions) demanded by the Russian delegates at The Hague, if spent in the Dominions would not only be safe but help development works very considerably.

Lord Long earnestly advocates that immediate steps be taken to appoint a Cabinet Committee to pave the way for an Imperial Economic Conference to deal fully and effectively with the development of inter-Imperial trade.

S.A. Reserve Bank.

The statement of the Reserve Bank for the week ended July 8 showed ratio of cash to liabilities to the public at 78·3 per cent.

Holland State Loan.

The subscription list will be opened to-day for the State 6 per cent. Loan of 150 million florins, the second instalment of a total loan of 300 million florins.

From Lloyd's shipbuilding returns for the quarter ended June 30 it appears that 390 vessels of a gross tonnage of 1,919,000 are under construction in the United Kingdom, which, compared with the previous quarter, shows a decrease of 316,000 tons. The returns show that some 1,315,000 tons are being built abroad. France, Holland and Italy show noticeable decreases. 500,000 tons of shipping, it is estimated, are under construction in Germany.

London Metal Quotations.

July 10: Standard copper, £62 17s. 6d. cash, £63 3s. 9d. forward; electrolytic copper, £70 5s. cash, £71 15s. forward; standard tin, £154 10s. cash, £155 5s. forward; foreign lead, £24 2s. 6d. cash, £23 7s. 6d. forward; quicksilver, £11 10s.; bar silver, 35⅝d.; bar gold, 92s. 10d.

Cheap Money and Gold Shares.

A London correspondent writes:—In connection with your interesting reference to the expression of a jobber that in his thirty-five years' experience he had "never seen so plainly sticking out" the certainty of a sustained revival in Kaffirs at no very distant date, may I point out that he had substantial grounds for saying this in the cheapening of money alone, apart from the now rapidly improving economic conditions in the industry. The Bank Rate is 3½ per cent., and with trade depression universal looks like going lower. It has always been a sound axiom that in periods of cheap money gold shares rise. The cheapest money years since 1815 were 1852 and 1895. In 1852 the low record bank rate of 1½ per cent. was reached, and the average for the year was 2 per cent.; and again in 1895 2 per cent. ruled without change (see *Commerce and Industry*, Statistical volume, pp. 224-225 (Constable). The period 1850-52 saw the boom in Californian and Australian gold enterprise, and the 1895-97 Kaffir and West Australian gold developments are historical.

OSBORN'S

BEST
TOUGHENED CAST STEEL
WHEELS AND AXLES,
LOOSE TRUCK WHEELS,
"U" PULLEYS,
"DALY" PATENT TAPPETS,
AND
CASTINGS OF ALL DESCRIPTIONS.

SAMUEL OSBORN
(S.A.), LIMITED.
P.O. Box 3162 **'Phone 4673**
JOHANNESBURG.
WORKS: CLYDE STEEL WORKS, SHEFFIELD

THE BALDWIN LOCOMOTIVE WORKS

(OF PHILADELPHIA, PENNSYLVANIA, U.S.A.)

BUILDERS OF LOCOMOTIVES SINCE 1831.

ANNUAL CAPACITY .. 3,500 LOCOMOTIVES.

Locomotives, Steam, Electric, Petrol (or other spirit) Fireless.
Locomotive Parts.
Railway and Ore Trucks of all types and sizes.
Cane and Industrial Cars and Tramway Equipment.

Wheels. Axles. Tyres.
Ladd Water Tube Boilers (to burn coal or bagasse).
Wilson Plastic-Arc Electric Welders.
Elwell-Parker Storage Battery Trucks.
Fitler Rope for Drilling and General Purposes.

WORKS AT

PHILADELPHIA AND EDDYSTONE, PENNSYLVANIA.

INDIVIDUAL SERVICE - WORLD WIDE

Loveday House, (Loveday and Marshall Streets), JOHANNESBURG

P.O. Box 7017. Cable and Telegraphic Address: "BALDLOCO." Telephone 1816.

Manufacturers of all Classes
of STEEL WIRE ROPES,
including Flattened
Strand and Lock
Coil.

EXCELSIOR

WIRE ROPE COMPANY, Ltd., CARDIFF.

Sole Agents:

FLINT & EPTON,

HOWARD BUILDINGS,
JOHANNESBURG.

RHODESIA NATIVE TIMBER CONCESSIONS,

ELOFF STREET EXTENSION,

P.O. Box 5530. JOHANNESBURG. 'Phone 2671.

SPECIALITIES. Rhodesian Teak for Sleepers, Flooring, Lagging, and all Mining purposes; is impervious to water, unequalled for Strength and Durability, and low in price.

Rhodesian Mahogany. Specially recommended for Truck Frames, Guide Blocks, Furniture, etc.

PRICES AND ESTIMATES ON APPLICATION.

CARBIDE

——ALL SIZES——
IN 1, 5, 10, 50 lb. TINS
and 100 lb. DRUMS

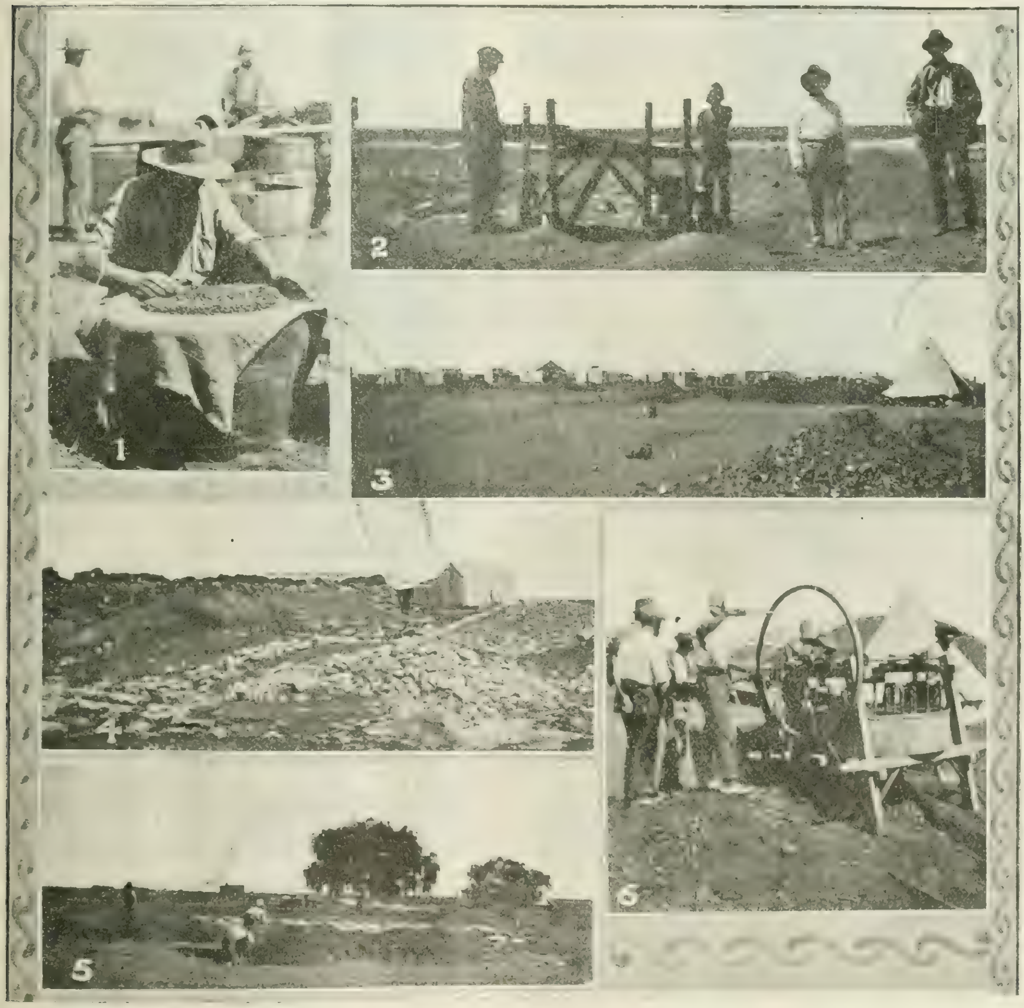
Apply: MANAGER,
RAND CARBIDE, LTD.,
SOUTH GERMISTON
'Phone 252 Germiston.

Latest News from the Gold Mines—World's Greatest Gold Refinery—The Diamond Revival—Birth of Iron and Steel Industry.

The South African
Mining & Engineering Journal
THE ONLY MINING AND ENGINEERING WEEKLY PUBLISHED IN AFRICA.
Established 1891.

Vol. XXXIII., Part I. JOHANNESBURG, TRANSVAAL, SATURDAY, JULY 22, 1922. No. 1608

Renewed Activity on the River Diggings.



Greater activity on the River Diggings. due to the increasing demand for diamonds. The Minister of Finance announced in the Assembly this week that the Union had received £90.000 from the export tax on diamonds in the last two months, against £12,000 for the same period of last year.

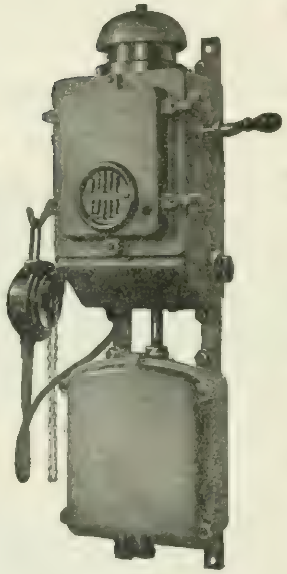
SIEMENS BROTHERS
AND
COMPANY, LIMITED.

MAGNETO MINING TELEPHONES

Hermetically sealed DIAPHRAGM behind extra strong GRID.

Gold plated DIAPHRAGM.

Very strong Dampproof CORD.



Closed.

DEFIES
- Damp
- Dust
- Inflammable Gas
- Rough usage
- Noise

Powerful (1600 Ohm) Watertight SIEMENS BELL.

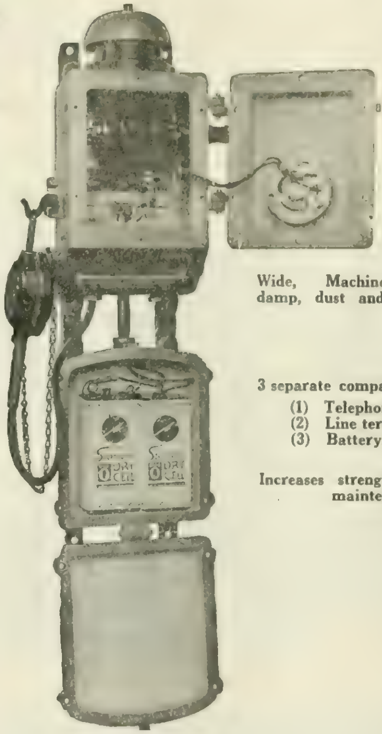
Very powerful hand GENERATOR.

Bare, tinned, copper internal CONNECTIONS.

Loud speaking RECEIVER

CORD specially reinforced here

Highest quality dry-cells.



Open.

Very efficient renewable CAPSULE TRANSMITTER.

Wide, Machine-faced joints damp, dust and flame proof

3 separate compartments for:—
1. Telephone.
2. Line terminals.
3. Battery.

Increases strength. Decreases maintenance.

The above is pattern No. 10. Another—No. 10a—is equipped with two receivers.

Representatives in South Africa :

A. J. G. SIMPSON, A.M.I.E.E,
African Life Buildings, 85, St. George's St.,
CAPETOWN.
P.O. Box 239 Capetown. Telephone : 1202 Central.

G. H. B. BERNARD, A.M.I.E.E.
9-10, Cotts Buildings, Rissik and Fox Sts.,
JOHANNESBURG.
P.O. Box 7404 Johannesburg. Telephone : 408 Centra

Telegrams : "SIEMENS."

Latest from the Gold Mines.

BRIEF REVIEW OF ENCOURAGING NEWS FROM MANY MINES—REDUCED COSTS OFFSET LOWER PREMIUM—FUTURE OF SILENT MINES—LARGE TONNAGES OF LOW GRADE ORE MAY BE WORKED —FAVOURABLE JULY RESULTS EXPECTED.

Favourable results for the current month are expected from the gold mines. As a thirty-one day month it will doubtless yield better returns than those for June. Native labour seems ample for present requirements, and the results being obtained point to an increasing measure of efficiency. Of course, much progress has yet to be made before the industry can be said to be in the healthy postiion of being able to make up for the loss of the gold "premium" by a saving in working costs. But the tendency is in the right direction. News from the different mines is in every case most encouraging, and below is given a brief and rapid unofficial review of the news of the week from the several properties.

State Mines.

The July returns promise well from this mine, and work on the new central shaft is progressing. On a share offering such gilt-edged security the rate of interest is still at an attractive figure, and the shares have been a feature on the market during the week.

Springs and Springs West.

Development in both of these properties is said to be improving, and they have been much in the public eye during the week.

New Kleinfontein.

No property stands to benefit more directly from a reduction in working costs than this, and the outlook, therefore, is much brighter.

Cinderella.

A public meeting in Boksburg has sent demands to the Government and the controlling house to reopen this property. Substantial ore reserves have been developed, but it will be necessary to raise a large amount of fresh capital to sink the second shaft and effect the connection with the existing workings. That the house of Albu will do its utmost to raise the money as soon as possible goes without saying.

Knights Deep, Simmer Deep and Jupiter.

It is regarded as certain that these now silent properties will all in time be worked by the mines adjoining them, which are developed down to their boundaries. A glance at the map will show that the adjoining working mines are the only ones to be in a position to deal with them. With a substantial reduction in costs, all these abandoned mines may, therefore, ultimately be worked.

Rose Deep.

Improving profits are expected from this mine, and the position has substantially improved of late.

Nourse Mines.

Nourse Mines, which improved its position in so marked a manner in recent months, is still doing well, and it is thought that it will share the good development of its next door neighbour, the City Deep.

Robinson Deep.

This mine is still making good progress, and in some quarters it is considered that were it equipped with an increased reduction plant, and the open ground on the south taken in, the mine would become one of the great producers of the Central Rand.

Aurora West.

There is said to be a healthy improvement in the values of the Aurora West, along the northern boundary of the property, and good profits are now being made.

Langlaagte Estate.

Better prospects are also reported from this mine, and with lower costs large tonnage of low grade ore hitherto passed as unpayable may be crushed at a profit. This, of course, applies to most of the mines.

Durban Roodepoort Deep.

This mine has been greatly benefited by the reduction in costs, and the position is now much better than that shown at the time of the last annual meeting.

West Rand Consolidated.

The General Manager of the mine in his evidence before the Mining Industry Board showed how with a larger reduction works costs would be further reduced and the mine put in a very different position.

Randfontein.

The reorganisation at Randfontein seems to be completed, and this great property seems now through the worst of its troubles.

Costs and the Premium.

The following table showing the relation between the value of the "premium" per ton last year read in the light of the big drop in working costs since the strike is significant:—

1921.	Profit.	Premium.	Premium per ton.	
	£	£	s.	d.
Aurora West	6,559	33,600	5	6
Brakpan Mines	*590,866	295,185	8	11
City Deep	71,516	441,376	8	10
Cons. Langlaagte	172,480	151,600	6	3
Cons. Main Reef	129,838	204,724	7	2
Crown Mines	672,030	688,123	6	4
Durban Deep	31,605	109,344	6	10
E.R.P.M.	78,258	420,497	5	5
Ferreira Deep	126,993	121,279	6	7
Geduld	369,566	196,650	7	3
Geldenhuis Deep	2,516	161,666	5	8
Government Areas	1,762,490	692,181	8	7
Knights Central	30,636	83,659	4	11
Langlaagte Estate	149,756	153,329	6	1
Luipaardsvlei Estate	46	53,156	4	6
Meyer and Charlton	293,400	98,277	12	1
Modder "B"	1,012,729	384,697	10	7
Modder Deep	916,824	287,290	11	2
Modder East	140,977	125,565	8	3
New Goch	14,367	45,626	4	7
New Kleinfontein	65,025	158,015	5	7
New Modderfontein	1,517,830	554,140	9	6
New Primrose	38,594	57,830	4	6
New Unified	24,207	31,102	4	8
Nourse Mines	61,465	170,910	6	7
Randfontein Central	245,319	454,635	6	2
Robinson	24,000	97,810	4	1
Robinson Deep	179,799	218,883	6	3
Roodepoort United (loss)	14,309	52,571	4	0
Rose Deep	124,907	168,838	7	11
Simmer and Jack	90,925	167,780	4	9
Springs	397,803	215,746	8	11
Van Ryn	98,404	114,164	5	11
Van Ryn Deep	922,918	352,400	11	6
Village Deep	112,746	195,634	6	5
West Rand Cons.	45,898	112,400	5	9
Witwatersrand	91,054	122,633	5	6
Witwatersrand Deep	83,700	118,270	5	10
Wolhuter	44,510	94,825	5	0

* Includes £100,620 placed to reserve during the year and taken to credit per 31st December.

Newcastle Iron and Steel.

We understand that the additional funds required by the Newcastle Iron and Steel Co., which the Government some time ago found itself unable to contribute to, have been found by the shareholders. The completion of these important works is therefore assured.

RYLANDS' STEEL WIRE ROPES

MANUFACTURED BY:
RYLANDS BROTHERS, LTD.,
WARRINGTON, ENGLAND.

SOLE REPRESENTATIVES FOR UNION OF SOUTH AFRICA:—
ARMSTRONGS & MAIN, LTD.,
84, Marshall Street,
JOHANNESBURG.

P.O. BOX 5988. 'PHONE 5203.

LARGE STOCKS ON HAND.

SPECIALISTS ..

IN THE MANUFACTURE AND DESIGN OF

STRUCTURAL STEELWORK.

ARMSTRONGS & MAIN, LTD.,
GENERAL AND CONSTRUCTIONAL
.. ENGINEERS, ..
84, Marshall Street,
JOHANNESBURG.

P.O. BOX 5988. TELEPHONE 5203.

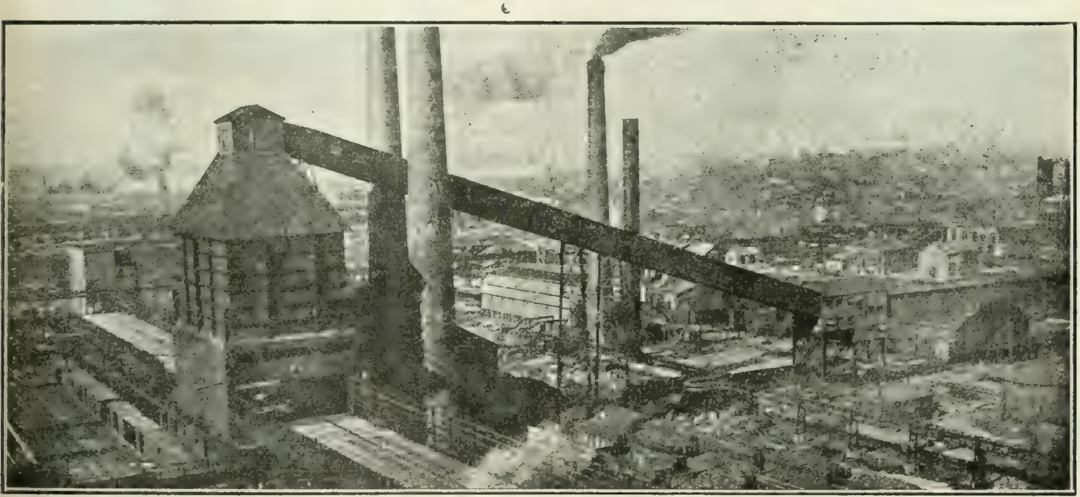
The Birth of a Great Iron and Steel Industry.

BOUNTIES BILL PASSED—EFFECT ON THE PRETORIA SCHEME—CASE OF NEWCASTLE—MINISTER'S STATEMENT—AMALGAMATION FORESHADOWED.

The Iron and Steel Encouragement Bill passed with a chorus of approval in the Senate this week. The Minister of Justice, who was in charge of the Bill, said it was an essential condition that the industry coming under the wings of the bounty shelter must not be a paltry one. An additional stipulation covered the use of the country's raw material. For instance, the Minister said, if an industry turned out 50,000 tons per annum of pig iron convertible into steel, the bounty would be 15s. a ton, the bounty remaining for three years and would then taper down by half a crown until by 1931-32 the bounty will have disappeared and the industry would be firmly established. Replying to Senator Stuart, the Minister supplied the information that under this Bill the Pretoria contract would go on

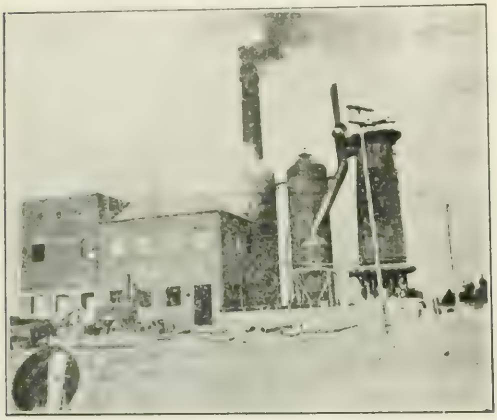
The Industrial Advisory Board Report.

In addition to the points quoted from the report of the Board of Trade and Industries last week, it is noteworthy that the report records the establishment of the Union Steel Corporation in 1912, and of other firms for remanufacturing scrap. Regarding pig iron, it is stated that 700 tons were produced at Vereeniging in 1917, and 2,000 tons at Pretoria in the following year. Plans have also been made by a firm at Newcastle, Natal. All three concerns contemplate iron and steel works could capital be secured. In this connection the Board points out that in Australia it was only after long disappointment that efforts to establish the industry were successful. It is also remarked that while the high prices due to the war fostered industrial expansion in this country, war conditions were not favourable to the establishment of great new industries demanding highly skilled labour and extensive plant from overseas. As far as it has gone, the growth of the steel industry from scrap is regarded as gratifying and encouraging. The general circumstances, as indicated in our last issue, are considered to afford good reason for hope, while at the same time directing attention to the question why, owing to non-availability of capital, the initiation of the industry on a national scale should be delayed. The Board accordingly frames its recommendations on the basis that the industry is a national necessity, and that the scheme should be such as to as far as possible ensure success. The recommendations already published, eschewing any indiscriminate grant of bounties, and making the proposed assistance contingent upon a definite minimum output, are justified by overwhelming evidence as to the impossibility of turning out iron and steel as a commercial proposition save by such a volume of production as the report lays down. This is the answer to any objection which may be raised on the score of establishing a monopoly—that under the special circumstances of the industry it is only through the medium of large scale operations that success can be attained. Incidentally the report shows that the iron and steel requirements of the railways, who are the largest South African consumers, are estimated at 29,000 tons annually. It is pointed out that if steel sleepers can be produced for 7s. 6d. or 8s. 6d., they might be largely used on country lines, and this would imply a further railway requirement of some 10,000 tons per annum. The Board confines its estimate of the general consumption, including the railways, to a starting figure of 100,000 tons.



A Dream of the Future: What a Great Iron and Steel Industry looks like.

Earlier in the week, in the Assembly, Mr Malan gave a very brief statement on the Bill. South African experience, he showed, has been much the same as that of other new countries, namely, that an iron and steel industry is very difficult to establish in face of the competition of old-established industries in Europe or the U.S.A., largely because of the hesitancy of capital. Three experiments have been made in the past with a view to developing the iron industry, among them being the scrap iron contract of recent date. The Minister pointed out that all these efforts had failed in their main object chiefly because of the want of capital. He gave a brief account of such enterprises as the Dunswart Furnace, the Union Steel Corporation, and the Newcastle enterprise, and stated that expert opinion was now satisfied that we had excellent supplies of raw material within easy reach of each other. The Board of Trade and Industries, whose report was recently published, holds that in the matter of price a local industry could compete successfully with other countries, and that a good export trade is by no means out of the question. Still capital has remained shy, as even in the case of the East Rand Goldfields, and the Government had to consider whether it should assist in the establishment of an iron industry, and, if so, how best [illegible] The suggestion that the Government should raise the [illegible] it was turned down, and the present scheme was ultimately adopted. The conditions of the bounty are that at least 50,000 tons of iron or steel must be produced within a twelve months' period, and if the plant is insufficient no subsidy can be given. Furthermore, the production must be from South African material. The bounty will taper from a figure of 15s. a ton in 1924-25 by 2s. 6d. decreases until in 1931-2 it no longer exists. The bounty will be 15s. on pig iron per ton, with an additional 10s. per ton on such portion of the pig iron as is converted into steel. Thus the Government's theory is that in eight years the industry will be fully established. As regards advances, whereby the Government will be authorised to give subsidies in advance of the actual production of the iron or steel, Mr. Malan held that the industry could not succeed without this system and he saw very little risk in the novel method proposed.



Newcastle Iron and Steel Works.

The Case of Newcastle.

The Minister later, in replying to the debate, explained that the 50,000 ton limit had been fixed out of consideration to the Newcastle undertaking, inasmuch as Mr. Eaton had informed the Board of Trade that by a small additional expenditure he could increase his plant up to the capacity of 50,000 tons, and with the assistance of bounties would be able to raise the necessary capital. The Minister held that the Government could not allow the bounty to be earned by small concerns which might close down as soon as they had produced the required quantity. Mr. Malan denied any intention to create a monopoly, and predicted that we should ultimately have to look to the export market and not merely to supplying the requirements of South Africa. A clause to protect labour would, he said, be quite out of place in such a Bill, and on the general question of bounties and protection he again reminded the House that the tariff was not necessarily the best method of protecting an industry. Each industry should be dealt with upon its merits.

Amalgamation Foreshadowed.

The Board of Trade report says that the output of an iron and steel industry being at least 50,000 tons a year, and the total market not more than 100,000 tons, a policy making for union and co-ordination in the producing sphere is manifestly essential. Small plants working up steel may, it is observed, have their use in future. But "we should be hazarding the success of the whole undertaking if we did not do all that is possible to bring about combination, especially as regards the production of pig iron. If the whole market, and the whole support of the Government and the country, is given to one institution, it will probably succeed. If the market and the support are divided among several institutions it is almost certain that they will all fail." Facts and figures are given to demonstrate that so far as pig iron is concerned there is no need for bounties, once the industry is firmly established. The remainder of the report deals with the detailed recommendations, already published, designed to attract capital to the industry, pointing out in so doing that in Holland the State has directly contributed to industrial capital, and that a large scheme on the same lines has now been launched in Brazil. As regards its estimates of present and future consumption, the Board believes that supply will create demand, and that while there may in the future be room for two or more corporations "if we begin with one, it is more than likely that, if we begin with two or more, there will not in the future be even room for one." With reference to the Australian precedent, the report notes the fact that recently most of the blast furnaces in the Commonwealth have had to be closed down.

Pretoria Iron and Steel Works.

Sub Nigel Capital.

The Sub Nigel, Ltd., has increased its capital from £775,000 to £905,000.

June Company Registrations.

J. Nunnerley & Co., Ltd., capital £100,000; De Unie Klub, Beperkt, capital £800; A. Reichman & Co., Ltd., capital £15,000; The Advertising Medicated Toilet Paper Company of South Africa, Ltd., capital £500; Watson's Shipping, Ltd., capital £2,000; The Jeppestown Properties Trust, Ltd., capital £4,000; De Pan and Wildfontein, Ltd., capital £2,000; Hohuke Estates, Ltd., capital £4,000; Schultis, Schwar & Co., Ltd., capital £20,000; Sayan, Ltd., capital £1,000; The Gipsy King Gold Mining Co., Ltd., capital £20,000; Pathescope (Union) of South Africa, Ltd., capital £50,000; Fochville Produce Agency, Ltd., capital £100; Ideal Garage and Welding and Cycle Works, Ltd., capital £600; Beynon Gold Estates, Ltd., capital £6,000; Krugersdorp Residential Properties, Ltd., capital, £2,500; L. J. Hitge & Co., Ltd., capital £1,000; Continental Motor Industries, Ltd., capital £1,000; Martindale, Ltd., capital £1,000; Natal Cabinet Works, Ltd., capital £2,500; The Regent Dairies, Ltd., capital £200; Mankowitz Scop & Co., Ltd., capital £1,200; The South African-Palestine Enterprise (Binyan) Corporation, Ltd., capital £100,000; Pyramids Wholesale, Ltd., capital £12,000.

The Design and Lay Out of the Rand Gold Refinery

WORLD'S LARGEST AND FINEST REFINERY—DETAILED DESCRIPTION OF THE DIFFERENT DEPARTMENTS—FINAL LINK IN THE RAND INDUSTRIAL CHAIN.

In the course of his valedictory address before the S.A. Institution of Engineers recently, Mr. R. C. Atkinson gave the following details of the Rand Refinery:—

The refining of gold entails a number of processes which are carried out in separate and distinct departments, and as the nature of the work necessitates that the men employed in each department should remain in their own section and not be allowed ready access to others, the buildings were designed with this end in view, and mess rooms, bath rooms, and conveniences were so placed that the men of any department have access to them without necessarily passing through other departments.

The work of the Refinery may very briefly be described as follows:—

(a) Receiving the bullion from the mines;

(b) Melting and sampling the bullion;

(c) Refining the bullion, *i.e.*, removing the silver and base metals contained in the gold;

(d) Casting the fine gold into ingots as required for export, or for disposal to the mint, and sampling same;

(e) Refining the by-products obtained in (c) above, in order to produce fine silver for export, or for disposal to the mint;

(f) Treatment of residues obtained in the above processes for the recovery of precious metals;

(g) Assaying at various stages the bullion and residues obtained in the above operations;

(h) Issuing the fine gold and fine silver bullion, and packing these for export or disposal otherwise.

I mention these processes in their proper order here, to show how we had to be guided by them in the design and general lay-out of the buildings.

The Several Buildings.

The buildings were commenced in August, 1920, and consist of:—(1) The Refinery office; (2) the assay department; (3) the rough gold melting house; (4) the gold refining department; (5) the silver refining department; (6) the chlorine generator house; (7) the sweep department; (8) the work shops and blower room; together with stores, coke bins, small boiler house, condensing chamber and chimney stacks, and last but by no means least, police guard rooms.

The Rand Refinery: Photo taken before completion of construction.

The buildings are surrounded by a boundary wall enclosing an area of 5½ acres of ground. Four strong rooms are placed in the most convenient positions:—One each in the refinery office, the rough gold melting house, the gold refining department, and in the silver refining department.

The Refinery Office.

This is a handsome building with Dutch gables and covers an area of 5,907 square feet. The various rooms comprise waiting room, manager's and secretaries' offices, record room, stationery store, library, and last but not least the public office or receiving hall, where the gold from the mines is received, and later packed in the refined state for issue. In one corner of this office a strong room is built in which the gold is stored as it is received from the mines, pending issue to the various departments to be refined. The whole of the work in this building has been carried out with a view to privacy and safety as well as general utility and convenience.

Assay Department.

The front of this building is in line with the front of the refinery office, similar Dutch gables being a feature of the design, these giving a pleasing appearance to the buildings, which are otherwise constructed purely from the point of view of utility.

The chief feature of the building is naturally the furnace room, which measures 67 ft. x 59 ft., and is 19 ft. high from floor to ceiling. A lantern in the centre of this room, providing light and good ventilation, is 30 ft. x 20 ft., and is 35 ft. high. The muffle and pot furnaces are placed at the northern end of the furnace room, the flues from these passing under the floor to the chimney at the western side. On each side of the furnace room are the rooms for the various processes incidental to this department, which include laboratory, store room and mess room. Two suites of four rooms for assayers, *i.e.*, eight in all, occupy the south end of the building, separated by corridors from the furnace room, the efficient lighting and ventilation fo these being a special feature. Hot water heating has been adopted in these offices. I might say here that all assays are made in duplicate on different samples by different assayers, using different furnaces, apparatus, etc., and making weighings by different system of weights.

The rough gold melting house and gold and silver refining departments are contained in one large building under one roof, but each department separated from the other by internal walls. The building is made up of two wings, one at either end, standing parallel to each other and connected up by a central building at right angles to the wings, and centrally placed in relation to the same. This has proved the most compact construction for the purposes for which the buildings were required, and obviated the extra walls for entirely separate buildings. It is probably one of the largest buildings under one roof in this country. The eastern wing, comprising the rough gold melting house, balance room, strong room, offices and mess room, measures 130 ft. x 53 ft. over all. The rough gold melting room contains 32 pot furnaces, the flues of which are taken under the floor to a condensing chamber and main chimney, to be described later, to which the furnaces in other departments are also connected. The centre block of the building, 100 ft. x 53 ft., contains the silver reduction and melting departments, with its office, strong room, mess room and conveniences. This department contains 16 pot furnaces, crusher, Chilian mill and revolving barrels, which are necessary for the production of fine silver from the product of the gold refining branch.

The operations in this department cover the extraction of silver from the chloride cakes received from the gold refinery, the result being gold-free silver, which is cast into 1,000 oz. bars for the market.

The gold-refining branch, or fine gold melting department is situated in the west wing, which measures over-all 133 ft. x 84 ft., the dimensions of the furnace room being 98 ft. x 80 ft., the remainder of the total space being taken up by the superintendent's office, strong room and mess room. The melting room is equipped with 64 pot furnaces and 3 tilting furnaces. All of the flues are under the floor, as in the other furnace rooms, and are joined up to the condensing chamber outside the main building and thence to the main chimney.

It is not possible in this address to describe the refining process in detail, since by so doing I should be trespassing on Mr. Kahan's preserves. I may state, however, that it is in this department that the chlorine gas is passed through the molten gold, and this converts the silver and base metals contained in the gold into chlorides. This is the product which is sent to the silver room for extraction of the pure silver.

The chlorine generator house is placed at the south-east corner of the refinery enclosure, and the roof is supported on columns at regular intervals, otherwise there are no sides or walls to this building, this being necessary on account of the chlorine gas, a small leakage of which cannot be avoided, and which would otherwise not be able to escape. Here six Edwards' oscillating generators for the production of chlorine gas are installed; these are operated by an electric motor placed overhead in a small concrete house which spans the roadway between the generator house and the heavy chemical store; the motor being connected through reduction gearing to a line shaft from which the generators receive their motion, it being possible to unclutch and, therefore, take out of service each generator separately. The raised concrete structure, which contains the driving gear, also serves as a support, or stand, for the acid tank which contains the acid, and which is directly connected with the generators; the acid being pumped up to the tank and then allowed to gravitate to the generators as required.

Workshops and Sweep Room.

The workshops comprise an engineer's shop of respectable size, a small carpenters' shop and a small smiths' shop. In another portion of this building two large Roots blowers and a small air compressor are installed, together with their motors and electrical apparatus. These are connected and supply air to the furnaces in the several departments. The sweep room contains ball mills and Chilian mills, as well as lead and Cupel furnaces. In this department all sweepings, broken crucibles and other residues are treated for the recovery of their gold or silver contents. In another portion of the building a portable type boiler is installed to supply steam, which is required for the chlorine generators, heating of buildings, etc.

Condensing Chamber and Main Chimney.

As previously stated, the gases from the refinery furnaces are conducted in flues under the floors and below the ground level outside the building. The flues are arranged so that all gases enter at one point into the condensing chamber. This structure is circular on plan, and is 20 ft. 6 in. internal diameter, and 21 ft. from floor to crown of dome. The dome is struck from two centres; the radius at haunches is 4 ft. 9 in., and that of the crown 12 ft. A series of steel ropes with specially designed tightening gear is provided at the springing of the dome to take thrusts arising from possible distortion of the brickwork under the high temperatures which will prevail within the chamber when a large number of furnaces are in operation. The chamber is designed to reduce the velocity and temperature of the gases, and will have a system of baffle walls or screens arranged to facilitate the precipitation of dust and volatilised metal which may enter. From time to time all flues, furnaces and crucibles—in short, all materials coming into contact with the precious metals in the refining processes—will be cleaned out, and, with the sweep, removed to the sweep treatment room for the recovery of the metals contained therein. The refinery chimney is designed to carry off the gases produced by the whole of the 115 furnaces if in operation at the same time. The ruling internal diameter is 4 ft. 6 in., and the height from base to cap is 80 ft. The chimney is lined with fire-bricks to a height of 30 ft. from the base, the lining being built separately with a cavity between it and the inner face of the shaft. The lower portion has a batter of half an inch to the foot, and the remainder up to the lower part of the ornamental band three-eighths of an inch to the foot. The upper portion is vertical. The cavity is closed at the top and ventilated to the external air.

The chimney at the workshops buildings is of similar design, but of smaller dimensions, namely, 4 ft. internal diameter and 66 ft. high. Both these stacks are built with circular-faced and radial-ended stretcher bricks, with alternate rectangular bricks as headers forming flemish bond, in lime mortar, except for the beds and joints on the inner face, which are in "dagga" to a depth of 4½ in. This was introduced as it was thought that the chlorine which will be passing up the shaft might have injurious action on the lime.

The concrete bases under these chimneys are of such dimensions as to distribute the weight to the extent of less than one ton per square foot.

Store Rooms.

Three large store rooms, 50 ft. x 30 ft., are placed near the south wall, a railway siding being between the stores and the wall. These are fitted for the storage of the various materials, apparatus and appliances, which are daily required in the process of refining, and each store is placed in the most convenient position as regards its contents, and the building where those stores are used. The railway siding, which is a branch off the mineral line, enters the refinery enclosure through a gateway at the south-west corner, strong iron gates being fitted here to close when the siding is not in use. The coke bins and coal bunkers are also placed alongside the siding to facilitate off-loading railway trucks direct into the bins. Adjacent to the coal bunker and under the same roof, a kitchen and mess room for natives are situated. The switch and transformer house placed near the eastern boundary wall is self-contained, and houses the apparatus for the distribution of electric current to the various motors installed, and lighting the refinery buildings and European quarters. Current is received from the Victoria Falls and Transvaal Power Company at a pressure of 500 volts, and is transformed down to 125 and 220 volts for lighting. A motor car shelter, sufficient for two cars, together with accommodation for workmen's cycles, is centrally placed, a small kitchen being situated under the same roof for the convenience of the staff.

The entrance gate is situated in the centre of the north boundary wall and suitable guard rooms are provided on both sides of the gates; these are suitably furnished for the constant occupation of the police. Outside of the wall and twenty feet distant, an ordinary wire fence is erected all round the refinery wall, the area between the wall and the fence being a prohibited area.

To the west of the refinery enclosure, rooms sufficient to house 40 natives are situated, and on the same side at some considerable distance a septic tank installation is situated, to which all conveniences in the refinery are suitably connected.

On the east of the refinery 22 dwelling houses have so far been erected to house the white employees, and these have been built in a manner which is in keeping with the general scheme of utility combined with pleasing appearance, which is a feature of the entire lay-out.

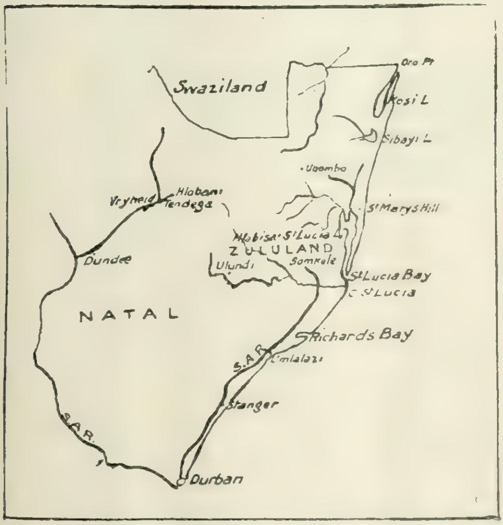
General.

The whole of the buildings have been constructed in a manner worthy of the great South African gold industry, of which it forms a completing link. The best was aimed at in material and equipment, with due regard to the best economy over a reasonable number of years.

Modder Shares.

At the recent meeting of the Central Mining and Investment Corporation Sir Lionel Phillips, when referring to the large blocks of ex-enemy shares offered by the syndicate formed for their purchase to shareholders of the New Modderfontein and Modder B companies, explained that the balance of about 146,000 New Modderfonteins and 70,000 Modder B's had still to be placed, and added: "We are considering the best course of procedure with a view to early liquidation of the syndicate." The *Morning Post* now says that the block of Modder B's was dealt with a few days ago, and that the balance of New Modderfonteins has since been successfully placed in London.

THE NEW ZULULAND HARBOUR.

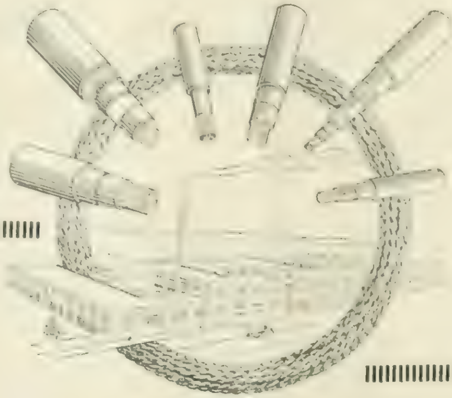


Sir George Buchanan, the eminent English Harbour Engineer, has been commissioned by the Union Government to report on a new Port for Zululand.

PLANET-ARCTURUS GOLD MINES.

The report for 1921 states that the lessees treated during the year 65,120 tons of ore, yielding 29,911·39 oz. of fine gold of a realised value, including premiums, of £157,534; less working costs, excluding development redemption (averaging 34s. 7¼d. per ton), £112,682; balance, £44,652. Deduct expenditure by lessees on development and stores, interest, etc., £33,918; net surplus, £10,734. This has been applied in reduction of lessees' expenditure recoverable under their lease, leaving a balance due at December 31, 1921, of £148,923, including accrued interest. Work performed during the year disclosed no appreciable addition to the tonnage of payable ore, and, in view of the disappointing results, the general policy had to be reconsidered, it being finally determined by the lessees to treat only such blocks of ore as would best pay under existing conditions. It has, however, not been found practicable to carry out this policy to the extent intended owing to the erratic nature of values in stopes, so that it has been necessary to take out full width of reef, with the result that values treated could not be adequately controlled, and an undue proportion of low grade ore has to be treated, thus depreciating values and yield. The ore reserves at December 31, 1921, were computed at 98,929 tons, averaging 13·3 dwt. per ton, in addition to 52,170 tons of low grade ore of an average value of 7·9 dwt., which it is hoped under improved conditions to treat later. Every effort on the part of the lessees has been made to treat the maximum tonnage and to reduce working costs, which during the past year were decreased from 37s. 4¾d. for March quarter to 32s. 11d. for December quarter, but as against this reduction there was a decline in gold premium received.

OSBORN'S
HIGH-GRADE
—TOOLS—
TWIST DRILLS, FILES, PICKS,
SHOVELS, SAWS, HACK-SAWS,
HAMMERS, STONE FORKS, Etc.
SPECIFY
"OSBORN'S"
AND GET THE BEST.
SAMUEL OSBORN (S.A.), LTD.
Box 3162. 'Phone 4673.
JOHANNESBURG.
Works: CLYDE STEEL WORKS, SHEFFIELD.



All Cables, Wires and Flexibles sold by the British General Electric Co., Ltd., are made at the Pirelli-General Cable Works at Southampton, England.

Immediate deliveries can be given from large stocks held in this country.

PIRELLI-GENERAL Wires and Cables

"PIRELLI-GENERAL" Cables form an integral part in the successful application of Electricity to Mining, Industrial and Commercial Requirements. :: :: :: ::

"PIRELLI-GENERAL" Wires and Cables are manufactured by the most modern and up-to-date methods; they embody all that science and experience can devise for the production of the best possible cables at the lowest prices. :: :: ::

The British General Electric Co. Ltd.

Representing The General Electric Co., Ltd., of Eng.

Head Office —
Johannesburg
Corner Loveday and Anderson Streets
Box 2406 Phone 4242/3 Tel.: "Current"

Capetown
83-84 Castle St
Box — — 1327
Phone — [illegible]
Tel. "Induction"

Durban
56 Field Street
Box —— 922
Phone — 1793
Tel. "Ampere"

Agents at—Port Elizabeth, East London, Maritzburg, Bulawayo, Delagoa Bay, Beira, Dar-es-Salaam, Tanga, Zanzibar, Mombasa, Nairobi, Uganda, Etc.

Special Quotations upon Application.

Mining Development in the Union.

RELATIONSHIP TO GENERAL PROGRESS OF THE COUNTRY—QUESTION OF TRANSPORT—NEED FOR CLOSER GEOLOGICAL SURVEY—THE PROSPECTOR'S FIELD—THOUSAND MILLION TONS OF COAL.

At the S.A.A.A. Science at Delagoa Bay this week, Dr. E. T. Mellor, M.I.M.M., F.G.S., chose for the subject of his address as President of the section of the Science Congress which comprises chemistry, geology, metallurgy, mineralogy and geography within its scope, the development of the mining fields and some of the relationships of mining enterprises to the life and progress of the country generally.

The development of the Rand, he said, in the course of a highly interesting paper, which met with much appreciation, may be said to have been comparatively slow, and a very large proportion of those living in its vicinity found it already an established fact when they first came to the district. Partly on this account, perhaps, and partly owing to the widely ramifying nature of its influence, the important bearing of such a mining field on the development of a young country like South Africa is not generally appreciated even by those who dwell within easy reach of the field itself, while by the inhabitants of more distant parts of the country it is still less understood. The Witwatersrand is usually looked upon by such people as an extraordinary place, where almost anything can happen, and which often has a disturbing influence on an otherwise peaceful country.

Transport Facilities.

To illustrate the driving power which even comparatively small mineral deposits may exert on the development of at least the first necessity of opening up a young country—the provision of transport facilities—Dr. Mellor mentioned the Tsumeb Mine in South-West Africa and another remarkable mineral occurrence, the Broken Hill Mine in Northern Rhodesia. He chose these instances because in both cases their influence had been quite clear and was not obscured by the influence of other factors, as in the case of a mining field of quite another order of magnitude like the Witwatersrand. In such a case the longer period over which the development of the field had been spread, its situation in the neighbourhood of other centres of activity of various kinds exhibiting a parallel growth, rendered it less easy to recognise clearly the specific influence exerted by the goldfield itself. In the direction to which he had drawn attention in connection with his two former examples, however, that of transport facilities, it was only necessary to glance at a railway map of South Africa to realise to what an extent the railway system of a very large part of the Union had been influenced by the goldfield of the Rand. They saw in it not simply the objective of a single line of railway, but of many such lines—a ganglion in the transport system, so to speak. He believed it would be interesting and illuminative if the Railway Administration were to publish returns in such a way as to show the actual earnings of the various main lines and branches in the South African railway system. It was not likely, for many reasons, that that would ever be done, but he did not fear contradiction when he said that the returns on traffic directly or indirectly connected with the mining field of the Rand had furnished the largest portion of the means of building up their system of railways and harbours and played a still more important part in maintaining them.

The Recent Upheaval.

Perhaps, continued Dr. Mellor, nothing in the history of the Witwatersrand goldfield had tended towards the realisation of the intimate way in which its fortunes were interwoven with those of the country in general, and how far-reaching was its connection with the trade and prosperity of districts so remote from it that they could hardly be expected to be affected by it, as the recent upheaval on the Rand, due to the strike and the other complicated social and political movements which followed in its train. The manner in which the cessation of mining activity, even for a comparatively short period, made itself felt in centres far remote from the Rand, as recorded in the Press at the time, was one of the most striking consequences of recent events.

Dr. Mellor then proceeded briefly to review the very varied phases which might be passed through in the growth of a mining field, and to consider in what directions those engaged in scientific pursuits might be called upon to assist in their development.

The Prospector.

In doing so he discussed the qualifications of a prospector, and said the compelling desire for the free life prospecting usually involved shrewd observation, abundant physical energy, an instinct for minerals, and above all, an untiring optimism were the qualities most required. That this was so was obvious from the well-known fact that few prospectors ever attained a material reward in any way adequate to the energy they had put into their occupation. This could scarcely be wondered at when they considered the few mineral occurrences which ever reached even the earlier stages of what might be called actual mining propositions. The Inspector of Mines for the Pretoria District showed in a recent report that the percentage, which was so fortunate, amounted only to some 5 per cent., the remaining 95 per cent. proving of no material worth, and this percentage was borne out by experience in other parts of the world.

In what were usually referred to as the "early days" of the Union, they were, he believed, possessed of a considerable number of really good prospectors, attracted here from many other parts of the earth by the early gold discoveries. He was not at all sure that they possessed many such men to-day, the reason being perhaps partly that newer fields had always the greatest attraction for the prospector, and partly the poor inducement offered to such men in South Africa to-day. One could not help feeling that the conditions under which the prospector worked, and especially those affecting his ability to secure the reasonable fruits of his work, might be greatly improved. One of the reasons why prospectors reaped so little advantage from such finds as they made was perhaps their disposition to attach more importance to an immediate recompense in money than to the retention of a share in whatever the future might hold for the mineral deposits they might discover.

Importance of Geological Survey.

Dr. Mellor next proceeded to deal with the importance of the work of an organised and systematic geological survey from the point of view of the seeker after new mineral fields,

MAGNOLIA
ANTIFRICTION METAL
TRADE MARK
"FLOWER" BRAND.
. HAS THE LOWEST CO-EFFICIENT OF FRICTION.
KEEPS down the bill for lubricants, making **BEARINGS** smooth as glass and keeping them **COOL** under heaviest pressures and highest speeds.
Manufactured and Sold By—
THE MAGNOLIA ANTI-FRICTION
METAL CO. OF GREAT BRITAIN, LIMITED.
49, QUEEN VICTORIA STREET, LONDON, E.C.
Agents for South Africa: FRASER & CHALMERS, Ltd., Johannesburg,
Bulawayo and Salisbury

and also the importance in tracing possible extensions of existing fields and the recognition of signs similar to those in which the development of mineral deposits of particular type had already been proved. Thus in such cases as the tracing of the continuation of the gold-bearing reefs of the Witwatersrand under the Far Eastern portion of that district, in the location and exploration of new coalfields or the systematic testing of a possible oilfield, geological survey work became of the greatest importance, the value of which was thoroughly recognised even by those who viewed the question entirely on hard business principles. It was difficult to refer to this aspect of his subject without calling attention, as attention had been called many times before, to the very meagre support given by the Government of this country to geological investigation, especially as compared with the expenditure on other departments of scientific work, such as those connected with agriculture. It still remained a striking anomaly in South Africa that the industry which suffered the greatest incidence of taxation was the one which benefited so little by Government aid to the branch of science most nearly related to it.

Extensive Field Still Open.

Referring to those ores in which the ore bodies were of a complex nature and included a comparatively large variety of minerals, frequently forming an aggregate which was very difficult to deal with, Dr. Mellor said there was no doubt that there still remained an extensive field of research of an interesting and probably profitable nature, in the investigation of both the chemical and physical constitution of some of those complex ore bodies. It seemed likely that by adapting some of the methods of microscopical investigation which had come into use in connection with nearly allied lines of study, some very important results might be obtained.

It might be thought that when a mining field had attained to the productive stage on a large scale, its future would be simple and easy. It seemed, however, that when a mining field had reached such a stage, it was likely to enter upon a second period of uncertainty from quite a different cause. There were gold mines on the Rand of which it could be confidently asserted that so far as the intrinsic value of their contents went they carried none of the risks usually associated with gold mining, yet had had new elements of uncertainty added from quite outside sources. The very importance of a mining field such as the Witwatersrand to the community attracted to it the notice of the politician, the labour reformer and the tax gatherer. Here he thought, however, they had better leave the matter, for it passed out of the sphere of their section.

Thousand Million Tons of Coal.

Referring to coal mining, Dr. Mellor stated that he had shown in a recent paper read before the Geological Society that there had recently been proved in the Transvaal by systematic boring a large extension of the Witbank coalfield in which had been definitely located no less than a thousand million tons of high-grade coal, which was so easily accessible that it could be got out in almost any desired quantity in a very short time. It happened, however, that although a big new mining field had been proved and made ready for exploitation, its further development was suspended because of the absence of transport facilities, so that the full development of a mining field often lay outside the power of the geologist and the mining engineer. However, it would be much more difficult to create a coalfield than additional means of transport, so that no doubt the difficulties in the way of the further development of their coal resources would be overcome.

ROYAL SCHOOL OF MINES FRECHEVILLE RESEARCH FELLOWSHIPS.

The Imperial College of Science and Technology, South Kensington, London, S.W. 7, with which the Royal School of Mines is incorporated, is offering two Research Fellowships of £[illegible] a year each, tenable for one year and possibly renewable for a second year, to aid in carrying out any investigation or research connected with Mining, Mining Geology, Metallurgy or the Technology of Oil, which in the opinion of the Fellowship Committee is of sufficient general importance.

Applicants from among the Associates of the Royal School of Mines or others, and preferably men with some practical experience, if resident in South Africa, should apply in writing to the Secretary of the Chemical, Metallurgical and Mining Society of South Africa, Johannesburg (from whom further particulars may be obtained), before 1st September, 1922, giving the nature of the proposed investigation, qualifications for the work, and references.

It is anticipated that the Committee will make the awards by the end of November, so that the Fellowships and work may begin on 1st January, 1923. Holders will be expected to devote their whole time to the work, which may be conducted at the Imperial College, or in [illegible] at the discretion of the Committee.

THE DOYEN OF THE DIAMOND MINING INDUSTRY.

Sir David Harris, the well-known Director of De Beers, who celebrated his 70th Birthday last week.

ANSWERS TO CORRESPONDENTS.

"Pioneer" (Shamva).—Both stocks are fair mining risks at present prices, No. 2 being the more attractive of the two.

W. K. (Krugersdorp).—(1) Yes. (2) 7½ per cent.

Atlas.—The company has gone into voluntary liquidation.

Rhodesia Copper.

The report of Rhodesia Copper and General Exploration and Finance Company for year ended 31st March, 1922, states that investments held at 31st March, 1922, and taken into accounts at or under cost, amounted to £175,024. Income derived from investments and rents amounted to £15,097, and profit from land sales and investments realised was £7,279, making £22,376, less expenditure, leaving £19,512, plus amount brought forward, making £22,259. Directors recommend dividend of 10 per cent., less tax.

Underground Officials Views.

STATUS QUO CONDEMNED—RATIOS INEFFECTIVE—QUESTION OF ECONOMIES.

The Underground Officials Association last week submitted to the Mining Industry Board nine separate statements setting forth their views on the various terms of reference. With regard to the status quo agreement it stated: "The arrangement was illogical and absurd if taken literally, and the trade unions were ever trying to encroach on the spheres left to coloured labour, and to prevent the removal of whites who had become redundant, whether through misunderstanding the purport of the agreement and believing that the intention was gradually to extend its scope in order to remove overlapping, or in the hope of extorting that consummation from the employers without misunderstanding. The agreement, therefore, caused dispute making it valueless. The opinion is advanced, therefore, that the status quo agreement should be abolished as unsound from every point of view, and no attempt should be made to replace it by anything on similar lines."

Ratios would be Detrimental.

Under reference No. 2, the Association stated: "Experience suggests that the fixing of any ratio would be ineffective and might be mischievous. It might appear that a ratio would be a safeguard to white employment. Any ratio would have to be fixed high as not to injure the industry. Its existence would then be a constant reminder and a temptation. To some employers or their representatives it would always signify an ideal, and would in time become a fetish and an ambition. From the day such a ratio is fixed there will be a striving to obtain it. Thus instead of functioning as a safeguard to the employment of whites its effect might, and probably would, be quite the reverse. The conclusion arrived at is that the fixing of a ratio would ultimately react to the detriment of white employment and of efficient and economical working." Under reference No. 4: "The possibility of classifying the mines into two or more grades," the Association stated that the suggestion appeared unsound. The assigning if different ratios to different classes of mines would be difficult, as the circumstances of a mine vary, sometimes with great rapidity. The problems of the poorer mines are more difficult and their conditions worse. The arbitrary differentiation of wages or ratios, in an attempt to benefit the nonpaying mines, would almost inevitably result to their disadvantage. If the largest number of mines is to be worked, everything possible should be done to promote efficient and economical methods. All legal disabilities should be removed and legislation should aim at encouraging mining. Direct taxation should be levied on profit only, and any differential indirect taxation by railway rates or customs should be cancelled.

Suggested Controlling Board.

The allocation of as many positions as necessary to competent persons in the Mining and Works Regulations, or elsewhere, and the assigning of a minimum wage to each position by a wages board should take the place of the status quo. The Association also suggested the appointment of a controlling board to watch the State's interests in the industry, this board determining the standard of wages of any occupation would virtually control its allocation to Europeans and natives. On reference No. 3: "The methods to be adopted by the industry to effect economies," etc., the Association submitted a special memorandum, in which it was stated that the use of the word "economies" in the reference is disliked owing to the accepted signification of the word and any idea of gaining a great deal by economies is ill-founded. The mining industry has suffered a great deal from exponents of a policy of cheeseparing and makeshifts to avoid or postpone expenditure that has been necessary in the end. Economies can be effected by stinting necessary expenditure on capital requirements or reducing cost of stores or labour. Stinted expenditure on such things as development or lay-out only prepares further trouble and perhaps intensifies it. The limits within which the price of stores can be controlled are narrow if quality is to be maintained. Economy must be distinguished from parsimony if the effect is to be beneficial. What is required of the gold mining industry is not to save money, but to make as great a profit as possible. Economy must be based first and foremost on efficiency, and it is to be looked for from good methods, good and willing work from all—European and native—with proper direction and supervision. The desiderata are the best possible conditions of work by ventilation, lay-out and mining methods; the provision of most suitable, and the unhesitating rejection or discarding of obsolete or unsatisfactory tools, appliances and stores; the use of available labour to the best advantage; careful organisation of work; judicious and systematic training of workmen, white and coloured; every possible stimulus to workmen to attain, exert and maintain their utmost effort and skill by interesting them financially in every stage of production, giving security in and a guarantee against change in contract of service; the abandonment of any timeworn notion of valuing a man's work except by its relation to his achievement and the profit earned. To prevent stoppages the individual workman requires protection from wrongful interference by trade unions and a measure of State control. Since the public interest in the industry is enormous, direct supervision should be exercised over every phase of its activities and not, as now, only over health and safety.

Special Statements.

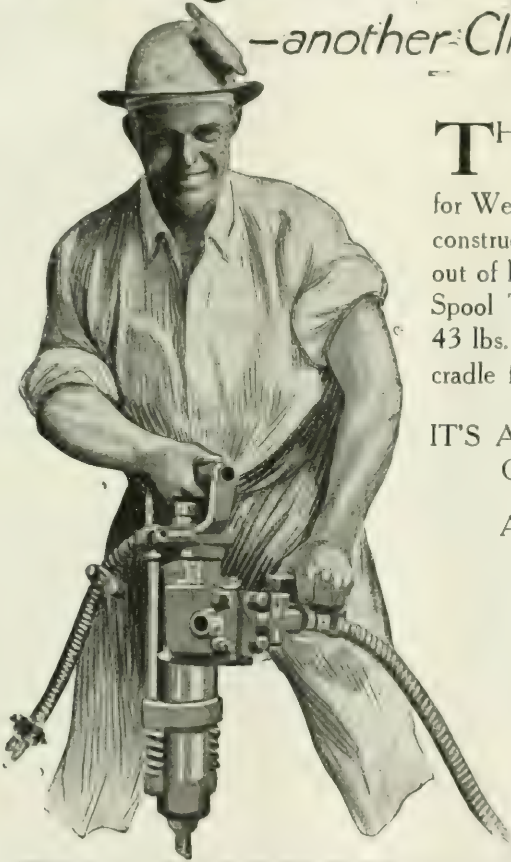
There were further special statements with regard to training and supervision, utilisation of labour, replacement of hammers by machinery, displacement of natives on machines, provision of tools, efficiency figures, wages and systems of payment, efficiency propaganda, taxation and control. Under the last-mentioned heading the Association argued in favour of a State organisation to supervise the industry, have access to all figures and supporting facts produced by the promoters of proposed amalgamations, reconstructions, etc., and should, furthermore, not only have the power to investigate but, in a measure, control the technical and financial administration of all the mines on the Witwatersrand, more especially those at present closed and those denominated "low grade."

Advantage of Simmer and Jack Scheme.

A special technical and statistical report was also submitted regarding the efficiency bonus scheme on the Simmer and Jack Proprietary Mines, for which the following advantages were claimed: No passengers tolerated; every man working for his own good; saving of all classes of stores; care of tools and machines and hoses; no wastage of timber; shift anxious to get down and get full time in; no delay in hoisting; maximum care of the shaft so as not to have the skip off; fullest use of natives; all broken stuff out to shaft boxes at once and hence none lost under falls of hanging or left in awkward places; clean mining and sorting of broken waste; contract natives' earnings improved; air and water leaks attended to at once by everybody, especially the former; reduction in the accident rate; keenness and contentment amongst the men; shift bosses able to attend to their proper duties instead of tramming and lashing principally; native loafing prevented, as everyone is concerned in the work being done; return of drills carefully looked after by all; anything likely to hinder or delay work is reported at once by everybody or even attended to by them; the best men want the worst places so as to get the high class price; everyone wants as much work as he can get; every man gets a bonus; injuries to natives carefully attended to immediately.

The witnesses before the Commission on behalf of the Association were Messrs. Lionel Harris, F. C. Ingle, and E. G. D. Wright, who were examined in detail on the various points raised.

The "Joburg" No I
—another Climax Success



THE JOBURG I is a sturdy little Hand Hammer Drill for Wet or Dry Drilling and is constructed to get the most work out of low pressure. Fitted with Spool Type Valve. Weight, 43 lbs. Can be mounted on cradle for driving.

IT'S ALL IN THE BUILD OF THE DRILL.

Ask for Particulars.

ClimaxSam.

Save your Bills—
Climax Drills
British from
Handle to Steel-Point

CLIMAX DRILLS

THE CLIMAX ROCK DRILL & ENGINEERING WORKS LTD
4, Broad Street Place, London. E.C.2., Works:—Carn Brea. Cornwall
(INCORPORATED IN GREAT BRITAIN).

LOCAL ADDRESS :—
49, Stella Buildings, cor. of Rissik and New Sts.,
JOHANNESBURG.

P.O. Box 4256. Telegrams : "Thumbscrew." Telephone 2794.

Letters to the Editor.

THE DORMANT MINES OF THE FAR WEST RAND.

To the Editor, *S.A. Mining and Engineering Journal*

Sir,—As you are aware, I have for years pointed out that the true solution to our difficulties here is to work more gold mines; not only as millionaire mines but as individual enterprises; for the day has come when men who understand the business can go out and by working themselves, on outcrop reefs, earn many times as much as they can as miners in deep mines. I desire in this letter to address myself to the inhabitants of Krugersdorp and its district, the Hex Valley, and my subject is the unworked gold in the neighbourhood. When Mr. Solly Joel took over the Randfontein mine, it was crushing the Randfontein series, but now that the Randfontein Deep has been acquired it will crush the Battery Reef, and soon 600 stamps will be crushing. Now, the Western Rand Estates has an enormous stretch of Randfontein Reef, and the returns from boreholes show rich values; recently, the Coronation Syndicate confirmed the Western Rand's returns, and it now appears that there is 20 miles of payable reef indicated. As all the recent activity has come from the Coronation people, who have already put down four holes and are busy putting down one more, it naturally occurs to one as strange that the major concern there does nothing to develop its discoveries. There is a growing agitation to enforce the working of reefs carrying payable gold. Now here is a case where for about 20 years nothing has been done, and as the principal owners of the concern are in England, or Mexico, it is possible that unless someone draws attention to the position nothing will be done and it might be another 20 years before that gold is worked. I do not think people in the districts realise their loss in not having that gold worked. I am sure they do not. I do not think that there is fairer valley in Africa than the Hex, and after many years of struggling its farmers have at last succeeded in getting a railway, which looks for support from Krugersdorp. Its hopes are based on an internal market, and with the labour conditions of to-day it is right it should have it; but I sadly think its market lies in that 20 miles of reef, and if the leaders in Krugersdorp, the Provincial Council and farmers do not agitate that market will lie dead with that unworked gold. I do not suppose any of those interested have ever tried to figure out how much gold possibly lies in that 20 miles of reef. Well, I have interrogated some of those interested in one of the ventures, and the estimated gold contents of that 20 miles, based upon the Randfontein gold returns, is just about eight hundred million pounds! It is an estimate, and is just as potent a one as the estimates made from boreholes when Mr. Joel floated the Government Areas, which is now one of the richest on these fields; but, whilst Mr. Joel has developed and is now employing great numbers and his mine gives a market to trade and farming, this line with its hundreds of millions lies dead. How long is it to lie dead? Of what use is dead gold to live men? That gold is there for man to work, and it must be worked, and if it is not worked it will only entail unnecessary suffering. If the laws of this country entitle men to live in other countries and tie up this country's resources, the laws are wrong and they must be altered. It is notorious that this wonderful country is kept back by party feeling, but any man, of whatever party, will agree with me that in this struggle to live no rich man is going to be protected by any law that is to debar men from their livelihood. The Minister of Mines recently stated at Heidelberg that measures should be taken to enforce landowners there to have the gold reefs worked on their farms well, here are reefs that are proved by a number of boreholes and computed to have eight hundred million pounds' worth of gold. Might I commend to His Honour the advisability of having the same pressure exercised here. But I go further. The surface of this Transvaal has not been scratched, and there are valuable minerals throughout the country; let there be a general law and let there be assistance to men to discover minerals, and when they are found treat these men as the Government propose to treat the iron industry of this country. Let us remember that one of the greatest geniuses in evolving trade and industry was Wilhelm the Second. It was through subsidies that he very, very nearly captured the whole world, and I am sure if his Germanic Majesty had had 20 miles of rich reef in his country, he would have done everything in his power to work it; then, why in heaven's name should our Mining Department ignore it for something like 20 years. I trust that all those who live in the district will support me and that the member for Krugersdorp will add his weight to the list and get fair play for the man who has to do the work of farming, mining and trading

W. P. TAYLOR

NATIVE MINE AMBULANCE COMPETITIONS.

To the Editor, *S.A. Mining and Engineering Journal.*

Sir,—To decide the championship of the Witwatersrand Native Mine Ambulance teams, a competition has been arranged between the district competition winners, *i.e.*:—Eastern district, New Kleinfontein Co., Ltd.; Near East district, East Rand Proprietary Mines, Ltd.; Central district, Crown Mines, Ltd.; Western district, Aurora West G.M. Co., Ltd. The competition will be held at the Ferreira Deep, Ltd., on Sunday, the 23rd inst., at 10 a.m. sharp. Each team, in charge of a responsible white official, must be present at the mine office at 9.30 a.m. The same rules and conditions which applied to the district competition will apply to this competition, and the officials in charge of teams must see that members of their teams are conversant with them, especially Rules 2, 6, and 13.—Yours, etc.,

FRED ROWLAND,
Secretary.

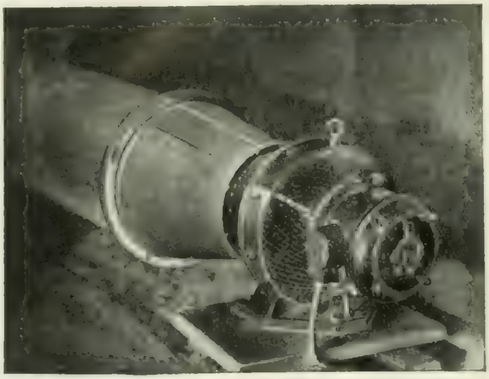
Johannesburg,
13th July, 1922.

RECOVERY OF GOLD FROM BLACK SANDS.

To the Editor, *S.A. Mining and Engineering Journal*

Sir,—In reply to "Miner" on above subject, I would recommend the Gilpin shaking table. It is cheap and does not require much power to work it. Of course, a system of concentration to be highly efficient would involve many features, such as Wilfley's jigs, tables, etc. "Black sands" is gold in association with magnetic iron, iridium, and perhaps other elements. The specific gravity is high, and therefore easy of concentration. In the "rouble paddocks" in Rhodesia nuggetty gold, black sands and float gold are found in association. The entire product is sent through sluice boxes. In general, in the jungle the practice is to sluice gravel through sluice boxes. The black sands collected, if not very great in quantity, may be "panned out" and caught on an inclined race and blanket strades. If in great quantity a Gilpin or Wilfley table would be very useful and may be put together cheaply (a few pounds). I would advise the comrade to send his concentrates when cleaned to some of the Rand smelting by-products institutes. By the use of horseshoe magnets, iron can be removed from the concentrates. The tailings should be "dumped" or "pitted," and thus stored for future re-treatment. A quarter inch tail of gold in the pan to the pound of crushed ore would indicate about 6 dwt. If the residues show this, put them through the sluice box again. The feed and water supply must be suitably regulated. An improvised steady head should be installed. In conclusion, I wish "Miner" every success in his venture, and would suggest that he scours the bed rock clean, as he may discover the vein or reef which has enriched the gravel.

L. P. SHERIDAN,
Members of the Executive, S.A.M.W.U



SPECIAL VENTILATION IN MINES

. SIEMENS .
SCHUCKERT
SCHLOTTER
BLOWER.
80% EFFICIENCY.

AIR OR ELECTRICALLY DRIVEN. —— COMPACT AND POWERFUL A NOTEWORTHY ADVANCE IN DESIGN.—MOTOR CANNOT BE OVERLOADED WHATEVER THE DUTY DEMANDED. —— THE IDEAL BLOWER FOR DEVELOPMENT WORK.

BRANCH OFFICE FOR SOUTH AFRICA :

C. KLEUDGEN, LTD.,
Corner of LOVEDAY and MARSHALL STREETS, JOHANNESBURG.
P.O. Box 1164. Telegrams : "KLEUDCO." Telephone Central 5435.

MILLAR DENNIS
ORIGINAL MAKERS OF

"BRADFORD INVERTED"

PLUG COCKS.

SOLE AGENTS:

GEO. CRADOCK
—AND CO. (S.A.), LTD.—
75-77, CULLINAN
BUILDINGS.

P.O. Box 316. Telephone 539.
Tel. Add. : "ROPES."
JOHANNESBURG.

ROBINS CONVEYOR PULLEYS

¶ Conveyor Pulleys must be of special design because of their slow speed of rotation and the consequent heavy strain on the end pulleys.

¶ Robins Conveyor Pulleys are the product of careful thought and long experience in design and manufacture.

¶ All pulleys are cast in one piece of the best grey iron to eliminate the breaking of shafts and pulleys when pulleys made sectionally and bolted together are used

¶ The arms and rims are heavily ribbed, thus allowing a proper flow of metal in pouring, to prevent shrinkage strains.

¶ The rims are finished with extra high crowns.

¶ Standard sizes of End, Bend, and Snub Pulleys carried in South African Stock for prompt delivery

Robins Conveyors (S.A.), Ltd.
(Head Office : Robins Conveying Belt Co., New York, U.S.A.)
BOX 4736, 'PHONE 4182, JOHANNESBURG
BOX 811, 'PHONE 3383, DURBAN

The South African Mining and Engineering Journal.

HEAD OFFICE: 176-180 Stock Exchange Buildings (2nd Floor), Fox Street, JOHANNESBURG, Union of South Africa.

Telephone **913.** P.O. Boxes **963** and **4573.**

Cables and Telegraphic Address: "MINING JOURNAL"

ANNUAL SUBSCRIPTION RATES: Oversea, £2; Union of South Africa and Rhodesia, £1 10s.; Local Delivery (Town only), £1 6s., payable in advance.

AGENTS FOR GREAT BRITAIN AND AMERICA: Argus South African Newspapers, Ltd., Byron House, 82-85, Fleet Street, London, E.C. 4.

Copies of this Journal are obtainable at all Branches and Agencies of the Central News Agency, Ltd., at all News Agents and Railway Bookstalls throughout South Africa, and at the London Agency as above.

CONTENTS.

	PAGE
Latest from the Gold Mines ...	1553
The Birth of a Great Iron and Steel Industry ...	1555
The Design and Lay-out of the Rand Gold Refinery	1557
Mining Development in the Union	1561
Underground Officials' Union	1563
Letters to the Editor ...	1565
Topics of the Week	1567
Share Market ...	1570
Engineering Section:	
The Rand's Great Water Undertaking ...	1571
June Gold Output: Group Returns ...	1575
Rhodesian Section:	
The Mineral Industry of Rhodesia	1577
Trade and Industries Section:	
The Week in the Mining Material and Engineering Trades ...	1579

TOPICS OF THE WEEK.

The Session Ends Cheerfully.

The Parliamentary session came to an end this week in an atmosphere of cheerfulness very different from that in which it opened last February. The Government, it would seem, had reserved all its good things for the last. Among these good things were the bounties for iron and steel, the big programme of railway, harbour, and public works development, and the announcement of the greatly improved financial outlook of the country. Early in the week Mr. Burton delivered a highly cheerful speech on the outlook, which, it may be hoped, will prove justified. His survey of the financial position shows that at the end of June the revenue had realised for the three months £5,715,000. The estimated revenue for the year is £28,695,000, and one-quarter of this would be £7,173,000, but though there is superficially a heavy shortfall, an analysis of the receipts for the quarter shows a progressive increase in Customs revenue and satisfactory yield from stamps, which are usually a good indication of improving conditions. Moreover, there has been a fairly substantial yield from the diamond export duty. There has been a slight rise in commodity prices, which will bring some relief to the farmers. Unemployment conditions on the Rand are improving and the only uncertain element is the situation in Central Europe, which, if it deteriorates into chaos, will have its repercussions in South Africa, as elsewhere. Expenditure shows signs of Government economy, and the prospective deficit for the year of £350,000 may be very substantially reduced. As to the Loan Estimates, which total £11,153,000, the amount to be borrowed will be something over seven millions, the balance being already in hand. Mr. Burton sees reason for thinking that we may be able to borrow at an early date on terms far better than heretofore.

Mr. Jagger followed with some account of the position of the railways. The accumulated deficit at the end of last year was about £4,200,000, and of this two millions are being met out of the Renewals Fund. Up to the beginning of July railway revenue showed a fairly heavy shortfall upon the estimated receipts, but on the other hand economies have been effected, with the result that revenue and expenditure for the three months are approximately balancing. Mr. Jagger emphasised that although the position is rather better it will be necessary for a long time to come to maintain rigid economy in order to make the balance true and work off arrear deficits. Before the Railway Appropriation Bill was passed there was some interesting discussion about the development of Kosi Bay, which is causing Mr. Henderson and the Natal members some uneasiness. Mr. Jagger indicated that the work of development will be pushed ahead. Thus it will be seen that both custodians of the Union purse-strings take a cheerful view of the outlook, and the Prime Minister is to be congratulated on so successful an ending to an exceptionally difficult session.

The Conciliation Policy.

One can sympathise with the very natural desire of Mr. Brace to bring the sittings of his Commission to a close in a blaze of beneficent conciliation. Unfortunately the industry has in the recent past suffered from too much rather than too little of that soothing syrup, and the history of its application on the Rand during and since the war should serve to convince Mr. Brace that the use of his panacea has been altogether overdone. The irony of the thing is that the defence of the Chamber's present seemingly reactionary attitude on the matter should fall upon Sir Evelyn Wallers, who only a few months ago was regarded as responsible for leading the Chamber too far in the very opposite direction. Sir Evelyn Wallers' spirited defence of the present policy, which we take to be one of letting the relations between mines and men evolve along unartificial lines, has the backing of practically all those responsible for running the industry, and it is to be hoped that he will not allow himself to be blarneyed out of his sound commonsense attitude by the blandishments of the well-meaning Mr. Brace

The Diamond Revival.

The latest encouraging opinion on the prospects of the diamond market comes from no less an authority than the Minister of Finance. In the Assembly this week Mr. Burton said that diamonds were now selling regularly, and he added that they had received from diamond export duty £90,000 for the two months to the end of May. That was a figure he wanted the House to bear in mind, because it was about as much as they had got in the previous seven months, and compared with £12,000 for the corresponding two months of last year. It appeared, therefore, that there was some good reason for anticipating, if not at once, at any rate in the near future, if not an entire restoration in regard to the diamond market, at all events a substantial improvement. The result was that the position to date was not without its encouraging features. Good news also comes in confirmation of this from America, the great market for the stones. Reports of a scarcity of high-grade diamonds in the markets of Europe, which are being brought back to the United States by returning buyers, explain in part, says the *Trade Record* of the National City Bank of New York, the fact that that country's own importation of diamonds in the fiscal year which ends with this month will be but about $32,000,000, or approximately one-third that of two years ago. The value of the diamonds imported into the United States in the fiscal year 1920, the high record year, was $89,000,000, against an annual average of about $30,000,000 per year in the preceding decade, $30,000,000 in the fiscal [illegible] 1921 and a [illegible] in the fiscal year 1922 which ends with the month of June. This slowing down in United States importation of diamonds in the past couple of years, says the [illegible], will not, however, seriously affect its rank as a holder of one-half of the diamonds of the world. This estimate that the people of the United States now own one-half of the diamonds of the world was made in 1918 by one of the most distinguished and painstaking diamond experts of the world, who stated in a carefully prepared discussion on this subject that: "There can be little doubt that the total value of diamonds now (1918) owned in the entire world is approximately $3,000,000,000, and that those in the United States represent nearly $1,500,000,000, or fully one-half of the world's diamond holdings."

South African Reserve Bank.

Considerable interest has been aroused by the attention given last week to the South African Reserve Bank. In view of the height to which the price of the stock of the bank has risen, indicating that in some quarters an exaggerated view is taken of the dividend prospects, it may be well to explain and qualify the statement that "the maximum dividend that can be paid is ten per cent., after which surplus profits go to reserve in certain proportions until the fund equals the paid up capital, when the Government claims them." Under the Currency and Banking Act of 1920 the dividend paid by the bank cannot exceed 6 per cent. (cumulative) until the Reserve Fund is equal to 25 per cent. of the bank's capital (i.e., Reserve Fund on present capital must be £250,000 before any dividend over 6 per cent. can be paid). After the Reserve Fund has been brought up to an amount equal to 25 per cent. of the capital, and until it has been brought up to any amount equal to the paid-up capital of the bank (say £1,000,000), any surplus profits after a dividend of 6 per cent. has been paid must/be allocated as follows:—(a) one-half to Reserve Fund; (b) one-quarter to the Government; (c) one-quarter to stockholders. When the Reserve Fund is equal to the paid-up capital, the net profits of each year, after the payment of a dividend of 10 per cent., must be paid to the Government. In no case may the dividend paid to stockholders exceed 10 per cent. per annum. It is particularly important to note that so long as any restrictions on the export of gold or on the convertibility of gold certificates are in force in the Union, a dividend in excess of 6 per cent. in all may not be paid. Any profits, after a dividend of 6 per cent. has been paid, must be placed to a special reserve fund for strengthening the gold reserve of the Union.

Central Mining Engineers' Report.

Messrs. H. Stuart Martin and A. J. Brett, in their comprehensive report, as consulting engineers to Central Mining and Investment Corporation, point out that at the end of 1921, to save the mines, a drastic reduction in working costs was required. When the position was explained to the miners, and new terms of working were suggested, the result of prolonged negotiations was the recent abortive strike. With its termination, Messrs. Martin and Brett have noted a better attitude on the part of the men to engage, which, they say, should "have a material effect upon the future, and undoubtedly lead to a marked lowering of working costs." Decreases have already taken place, and others may be looked for, as regards white labour and stores. Another effort in the direction of economy was seen in the reorganisation of underground work, and a further one that, after this month, the remaining portion of the cost of living addition to the wages of white men will cease. An important requirement of the mines is a better and more regular supply of native labour, for, in the past, there has been a surplus of natives in one part of the year and a dearth in another. In the report referred to, a list is given, and a comparison drawn, of the stores used in the mines, together with prices in June, 1914, and March, 1922. In April, 1919, the maximum seems to have been reached in price in regard to many items, the increase [illegible]. In June, 1914, explosives per case were 45s., and in March, 1922, 81s. Timber is also much dearer than it was, but by impregnating timber with zinc sulphat solution, it is thought there will be a considerable saving. An increase of cost takes place with additional depth of the mines, and rock pressure has its influence in the same direction. Messrs. Martin and Brett deprecate the monthly publication of working costs, and the attempt to "make even" the monthly returns—the latter being inimical to economical mining. They point out that the regularity of the Rand gold-bearing strata, though extraordinary, is only so in relation to other known goldfields. They describe the compensation for miners' phthisis as based on extravagantly high rates. At Crown Mines this amounts to 4s. 4d. per shift of underground employees; but, speaking generally, they say "the outlook to-day is undoubtedly more favourable than it has been for some time past." Increased efficiency has been secured by the improvement in the various types of jackhammers, and the more of these that are employed the better for the working of the mines. Health conditions have been steadily improving. The strenuous efforts to eliminate dust from the mines have had good results, but the managers have often to deplore gross and wilful carelessness on the part of the employees themselves. Experiments are continually being made, in metallurgical and mechanical practice, to reduce working costs.

Employers Tax Abandoned.

The egregious Employers' Tax is to go the way of the Advertisement Tax. In the House of Assembly this week, on the Local Estimates appeared an item of £400,000, representing the amount of the advances which are to be made to the Cape and Transvaal Provinces in view of their financial difficulties. Mr. Burton explained that the Cape anticipates in the current year a deficit of £400,000, while the Transvaal deficit will probably be £250,000. The Government has ruled the Super Tax out of count, and at the same time has recognised that, though expenditure has grown to an unjustifiable degree, it would not be reasonable to expect the Cape to cut its expenditure down by £400,000 in one year. To finance the Cape through its troubles an advance will be made of £200,000, "in the hope that the Administrator will find it possible to assist his finances by further reductions in expenditure." In the case of the Transvaal an advance of £200,000 will also be made. The Transvaal Provincial Council recently passed the Employers' Tax, which levies £1 per head on every employee in the Transvaal. This might bring in anything from £250,000 to £300,000 or more, but the Government has decided to make the advance of £200,000 conditional on the withdrawal of the Employers' Tax by the Transvaal Provincial Council. But this is not quite all. The Government has accepted in principle the Public Accounts Committee's proposals for a Geddes Committee in Union affairs. It will also appoint a Committee to investigate the finances of the Cape and Transvaal Provinces. Pending the report of this Committee the precise nature of the advances to be made to the two Provinces will remain undefined.

The World's Greatest Gold Refinery.

An interesting technical description of the design and lay-out of the Rand Refinery which formed part of a recent address by Mr. R. C. Atkinson, the outgoing president of the S.A. Institution of Engineers, appears in this issue. Mr. Atkinson has been intimately connected with the work of the refinery since its inception, and is therefore in a position to describe its layout and functions. In prefacing his address, Mr. Atkinson pointed out that most of the gold bullion at present produced throughout the world is refined by either one of two processes—the electrolytic process, or the chlorine process. The sulphuric and nitric acid parting processes are only used for refining certain classes of bullion. The Rand Refinery has adopted the chlorine process. South Africa is the largest gold-producing country in the world, and so it happens that we now have the largest and the finest gold refinery in the world. A few figures will confirm the statement as to its size. This country produces approximately eight million ounces of gold, valued, in normal times, with the price of gold at [illegible] about 85s., approximately at £34,000,000 annually. This represents about 50 per cent. of the world's gold production. The refinery now in operation has sufficient capacity to deal with this quantity. To express the above facts in more familiar terms, something like 24,000,000 tons of rock are treated here annually to produce about 270 tons of gold, so that each working day nearly a ton of precious metal is obtained. Therefore the new gold refinery will be receiving and treating each day one ton of gold. It should be noted that all the gold producing dominions of the British Empire have now established gold refineries to serve the gold producers. Australia has had several refineries for many years. The policy in that country appears to have been to establish a refinery and mint as soon as a goldfield of any extent has been proved. Canada's refinery and mint is of more recent date, and India, which only produces about £2,000,000 of gold bullion, but deals in much larger quantities, has established a gold refinery since the Great War. South Africa is now in a position to extract the gold from the ore and refine it, thus sending its product overseas in the most marketable form. It may appear strange that while South Africa has been the greatest gold producer in the world for many years, the refining of bullion has not been undertaken before now in the country where the metal was produced. No doubt there was a good reason for this, inasmuch as there is now a good reason for the establishment of such a refinery. This we can take for granted, more especially as it is well known that such a proposition has received consideration from time to time over a number of years. The Union Government decided in 1919 to establish a branch of the Royal Mint in South Africa, and this may have been the necessary determining factor which finally caused the industry to proceed with the erection of the refinery.

Notes & News.

S. A. M. Year Book.

IMPORTANT ANNOUNCEMENT.

The special number of the "S.A.M. and E.J." Year Book, which is now in preparation, will contain a valuable section on the coal fields and collieries of South Africa, Rhodesia, the Congo, and Portuguese East Africa. The Natal, O.F.S. and Transvaal coal mines will be dealt with at considerable length, and all details concerning area, finance, outputs, plant and character of coal will be given. There will also be special articles on Durban, Delagoa Bay and Beira as coaling ports, and these, combined with descriptions of the geology of the coal fields and the railway systems which serve them will revise and bring up to date the valuable data contained in the Special Coal Numbers of the Journal issued in 1919 and last year, and which universally were acknowledged to represent the best, most reliable, and comprehensive literature on the coal fields of South Africa that has been issued. The forthcoming Special Number will also contain valuable articles on the by-product industry.

* * *

Tanganyika Gold Mining Sale.

An example of the hole-and-corner methods which prevail in regard to the disposal of ex-enemy properties in Tanganyika Territory is disclosed in a local advertisement for tenders for purchase of the Sekenke Gold Mine, which is situated in the Kondoa Irangi district, some 140 miles from Manyoni Station on the Tanganyika Railway. The original owners were a German concern, the Kironda Goldminen Gesellschaft, and 12½ square kilometres freehold is involved, with an exclusive mining concession over it, together with the whole of the plant, machinery, buildings, tools and stores. The mine was worked until 1915 and had a battery of 25 stamps. Tenders had to reach Dar-es-Salaam by June 30, but it is safe to say that under existing methods possible purchasers will scarcely have heard of the transaction by that date, and the property, if at all worth considering, will be snapped up for a song by Asiatics, who are making quite a good thing over similar deals.

* * *

Ex-Enemy Property.

Interviewed by the *Cape Times*, Sir Walter Hamilton Fowle, Custodian of Enemy Property, stated that he had disposed of the enemy shares in most of the companies incorporated in South Africa. Since the beginning of May he had sold enemy shares in 102 mining and land companies. The price obtained for the shares sold in the Union during the last twelve weeks amounted to a total of £4,450,000. The shares not yet sold consisted of holdings, chiefly in companies, where there had been a failure to come to terms as regards the purchase price. The value of the remaining balance probably did not exceed £100,000. Sir Hamilton Fowle further stated that since the passing of the legislation in 1916 in connection with enemy shares the total liquidation in the Union itself had so far realised about £7,750,000. He also stated that the value of the assets which had been realised and returned to subjects of ex-enemy Powers who were resident or domiciled in the Union at the outbreak of war amounted to over £3,000,000. All proved debts owing by enemy nationals to citizens of the Union had been paid to them out of enemy funds

* * *

South African Trade with the United States.

Cable advice from the United States Department of Commerce to the American Trade Commissioner, Mr. P. J. Stevenson, shows that the volume of trade between South Africa and the United States totalled $3,000,000 for the month of May, 1922, an increase of $600,000 above the April figure and $1,060,000 above the total volume of trade for March. While exports from America to South Africa dropped in April to $800,000, May's total reached $2,400,000, an increase of $1,600,000. On the other hand, South African exports to America increased from $240,000 in March to $1,600,000 in April, and then dropped to $600,000 in May. During May the steel, automobile, building and leather industries were all very active. There has been a surprising revival in the motor trade. Orders now in the hands of motor-car manufacturers indicate that the present prosperity of the industry will probably last well into the year. Some of the leading manufacturers now have sufficient orders on their books to keep them running from four to five months. A survey of the nation-wide coal strike shows that slightly more than 509,000 have quitted work, including 115,000 who are non-union men. The anthracite miners have rejected the operators' proposal of a 21 per cent. wage cut, but from indications it appears that their position is weakening constantly. One of the best evidences of business improvement afforded during the last few weeks is the record of car loadings. The number of cars loaded during the week ended May 13 was the largest since the beginning of the coal strike. Since January of the current year there has been a distinct upward trend in the prices of staple farm products. Prices of cotton and wheat are now back in line with the general wholesale price level, which stands at about 50 per cent. above the 1913 average. Corn prices, however, have risen more slowly, and while still very close to the pre-war figure, they have nevertheless registered an advance of about 25 per cent. since the beginning of the year. From the point of view of the agricultural community, the improvement in the corn market is of more importance than that in the wheat and cotton markets, as an enormous quantity of corn still remains in the hands of the farmers while most of the cotton and wheat has passed into the hands of distributing agencies. While only a portion of the benefit from the rise in the case of the last-named commodities has inured directly to the benefit of the original producers, it has brought on a return of confidence in the agricultural districts, where depression during 1920 and part of 1921 had been most acute.

The Week in the Sharemarket.

RECOVERY AFTER "SHAKE-OUT"—INHERENT POSITION SOUND—CHEAPER MONEY—LONDON'S ATTITUDE.

The market generally has improved upon settling on [illegible] lower prices. As predicted, the forced selling has ceased, and there has been a decided inclination to repurchase shares at lower levels by those who were lucky enough or had sufficient judgment to sell at the higher figures. We are of opinion that the recent "shake-out" brought with it a certain amount of "firm-stock" selling, and this has now created a buying power which is able to act without financial assistance. London continues an occasional buyer of our good shares, while some selling of the smaller and more speculative descriptions has been in evidence. The feature of this selling has been the number of ready takers of almost any shares in this category. The ready absorption is evidently prompted by the almost certain further fall in costs. In spite of quieter business and already predicted set-backs, we have no reason to alter our optimistic opinion of the near future. The diamond market continues lifeless, but the remarks made by Mr. Burton (referred to elsewhere) must be considered extremely satisfactory for the future of diamond shares.

	Fri. 14th	Sat. 15th	Mon. 17th	Tues. 18th	Wed. 19th	Thurs. 20th
Anglo Amer. Corp.	21 6*	20 10	20 10*	21 3*	21 6	22 0
Apex Mines	6 9*	6 6*		6 6*	6 6*	6 6*
Aurora Wests	4 3	4 0*		4 3		4 0*
Brakpan Mines	40 0†	40 0†				40 0
Brit. South Africa				12 0*	11 6*	11 6*
Bushveld Tins	6 5*	6 5*	6 4*	6 5*	6 6*	6 5
Cinderella Cons.	2 6*			2 3*	2 6*	2 6*
City and Subs.		2 2*	2 3*	2 2*	2 2	2 6*
City Deeps	17 6†	16 9*	16 6*	16 1*	16 6*	18 0
Clydesdale Colls.	18 6*			18 0	18 6*	18 6*
Cons. Diamonds	16 3	16 3*	16 3	16 11	16 11	16 4*
Cons. Investments	25 0†	25 0†			24 0	
Cons. Langlaagtes	14 0*	14 3*		15 0*	14 0	14 6*
Con. Main Reefs	11 3*	11 3*	11 4	11 3	11 6	11 10
Con. Mines Select.	15 0†			15 0†	14 0*	
Coronation Colls.	36 0†	—	36 0†	35 0	35 0*	35 0*
[illegible] Freeholds	1 0*		0 6*			1 0*
Do. Syndicates	4 3*	4 3	4 6*	4 6	4 6*	4 6*
[illegible] Diamonds	5 11	5 10*	5 10	6 0*	6 0*	6 0*
Crown Mines	41 0*					
Daggafontein Mines	3 3*	3 6*	3 3*	3 5	3 3*	3 0*
East Rand Coals	1 1†	1 0*	1 1			
East Rand Deeps	0 9*	0 9*			0 8*	0 9*
East Rand Minings	11 0†				11 0	
East Rand Props	7 6*	7 6*	7 6*	7 6*	7 10*	8 0*
Eastern Golds	0 6*	0 6	0 6	0 7	0 6	0 8
Frank Smith Diams.	3 7	3 7	3 4	3 6	3 5*	3 6
Geduld Props	62 6*	62 6		64 0	66 6	66 0
Glynn's Lydenburgs		15 0†			15 0†	15 0†
Govt. Areas	97 0	97 6*	96 0	97 0*	98 6	97 6†
Hume Pipes	15 0†	15 0†		15 0†	13 0	15 0†
Knight Centrals	4 1*	4 1*	4 3	4 0*	4 0*	4 0*
Lace Props	8 9*	9 0*	9 0*	9 0*	9 0	10 0*
Leeuwpoort Tins	7 6*	7 3*	7 3*		7 3*	7 3*
Langlaagte Est.	1 6*	1 6*	2 0*		2 6*	2 0*
Meyer and Charlton			75 0†			
Middelvlei Est.				1 3*		1 6*
Modder B's.	34 9	34 9	35 6	35 6	35 6	34 6
Modder Deeps	43 3	43 0	43 3	43 6	43 9*	44 0
Modder Easts		7 9	7 8*	7 7*	7 8*	7 8*
Natal Navig. Colls.	29 0*	28 6*		28 9*		30 0†
National Banks	226 0		225 0†	220 0*	220 0†	
New Eland Dmds.	31 6*	31 6*	32 0*	31 6*	32 0*	32 6*
New Era Cons.	6 3*	6 9	6 6†	6 6*	6 6*	6 9*
New Geduld Deeps	1 6*	1 6*	1 6*	1 6*	1 6*	—
New Kleinfonteins	6 9*	6 9*	6 9*	7 0*	7 1	7 1*
New Modders	76 9*	76 6*	77 3	77 0†	77 3*	77 6
New Primrose				5 6†	5 6*	5 6*
New Unifieds				3 9*		
New State Areas	32 9*	32 6	32 6	33 0	33 3	33 3
Nigels	5 0*	—	—	—	5 0*	—
Nourse Mines	16 3*	16 0*	16 1	16 3	16 0*	16 7
Pretoria Cements	44 0*	43 6*	43 6*	44 6*	45 6	45 0
Rand Collieries					0 9	
Rand Nickels	1 0*			1 1	1 0*	1 1*
Randfontein Central				12 0†		11 3*
Do. Estates	18 4	18 3	18 6	18 9	18 9	18 9
Robinson Deeps	1 4*	1 3*	1 4*	1 4*	1 3*	1 3*
Roberts Victors	8 6†	8 6†	8 6	8 6†	8 6	8 1*
Rooibergs	3 0*			3 6*	3 6	
Ryan Nigels	4 0†	—	—	—		
Simmer Deeps	12 6*	6 0*	—	—	—	12 6*
Simmer and Jacks	4 7	4 4	4 6	4 6	4 1	4 1
S.A. Breweries					25 0*	
S.A. Lands	4 9*	4 8	4 9†	4 9†	4 6*	4 6*
Springs Mines	46 6*	46 9*	46 6*	46 6	47 3	47 3
Sub Nigels	12 6*	12 9*	12 6	12 3	12 6	12 6
Swaziland Tins	5 0	5 0*	5 0*	5 0*	5 0*	5 0
S.A. Alkali	16 6*	16 0*	16 6*	16 6*	16 9*	16 0†
S.A. Townships	9 0†	9 1†	9 3*	9 0*	9 6	9 6†
Transvaal G.M. Estates			12 0†		11 0†	10 6
Transvaal Silvers	11 0*		12 4	11 6	11 6	11 6
[illegible]	0 10†	0 4*	0 9*			0 9*
Van Dyks	0 9*					
Van Ryn Deeps	69 6†	70 0†	68 3	68 9*	69 3	
Village Deeps	11 9*	12 6	—	13 0†	12 0*	
West Springs	13 0	13 0	13 0	13 10	14 0	13 6
West Rand Cons.	5 6	5 0*	5 3†		4 6*	
Western Rand Est.		3 10*		3 10*		3 9*
Witbank Colls.	40 0†			40 0†	40 0†	
Witwatersrands	13 3†					
Wit. Deeps	12 0*	12 0	11 9*	—	13 0*	13 0
Zaaiplaats Tins	1 6*	1 6*	1 0*	1 0*	1 6*	2 3*
Union 5 per cent.	£101*	£101*	£101	£101½	£102*	£102½

* Buyers. † Sellers. a Odd lots. b Ex London.

Congratulations to Mr. H. O. Buckle, the President of the Chamber of Mines, on the cabled news of his marriage in England.

Progress at the Afrikander.

A visit to the Afrikander property at Rietkuil is an excellent cure for pessimists, and unfortunately their name at the present time is legion, says the Krugersdorp paper. For nearly a decade Rietkuil has been a waste land, except that maize fields had encroached on its fringes. Buildings, headgear and other outward and visible signs of mining operations had year by year disappeared, and the young generation only knew of it as a mining area by reason of the stacks of broken rock and fenced-in shafts. To-day the scene is one of busy activity. A 20 stamp battery is in course of erection, and up-to-date cyanide plant for slimes and sands are nearly completed, the engine room is practically ready, a row of marine boilers are practically ready for firing up, the shaft headgear has been put in thorough order and the finishing touches are being put to the line of rails from the grizzlys at the foot of the shaft head to the hoppers at the head of the mill. There are approximately 300,000 tons of developed reef of excellent grade, and an unlimited supply of water exists in No. 4 shaft, which will be pumped as required to the supply tanks on the kopje, and in addition the designer and controller of the mine and work, Mr. J. B. Wessels, is financially interested in the work, and is eminently qualified to do the best that can be done to make the venture a success. We cordially wish him good luck and good fortune.

GOLD MINE, NORTHERN TRANSVAAL.

£2,500.

Partner, Sleeping or active, with above capital for a producing Gold Mine. Five stamps working with 45 h.p. National gas suction plant and complete cyanide works. Capital required to increase plant and further development of property.

APPLY:

"GOLD MINE,"
S.A. MINING & ENGINEERING JOURNAL,
P.O. Box 963. JOHANNESBURG.

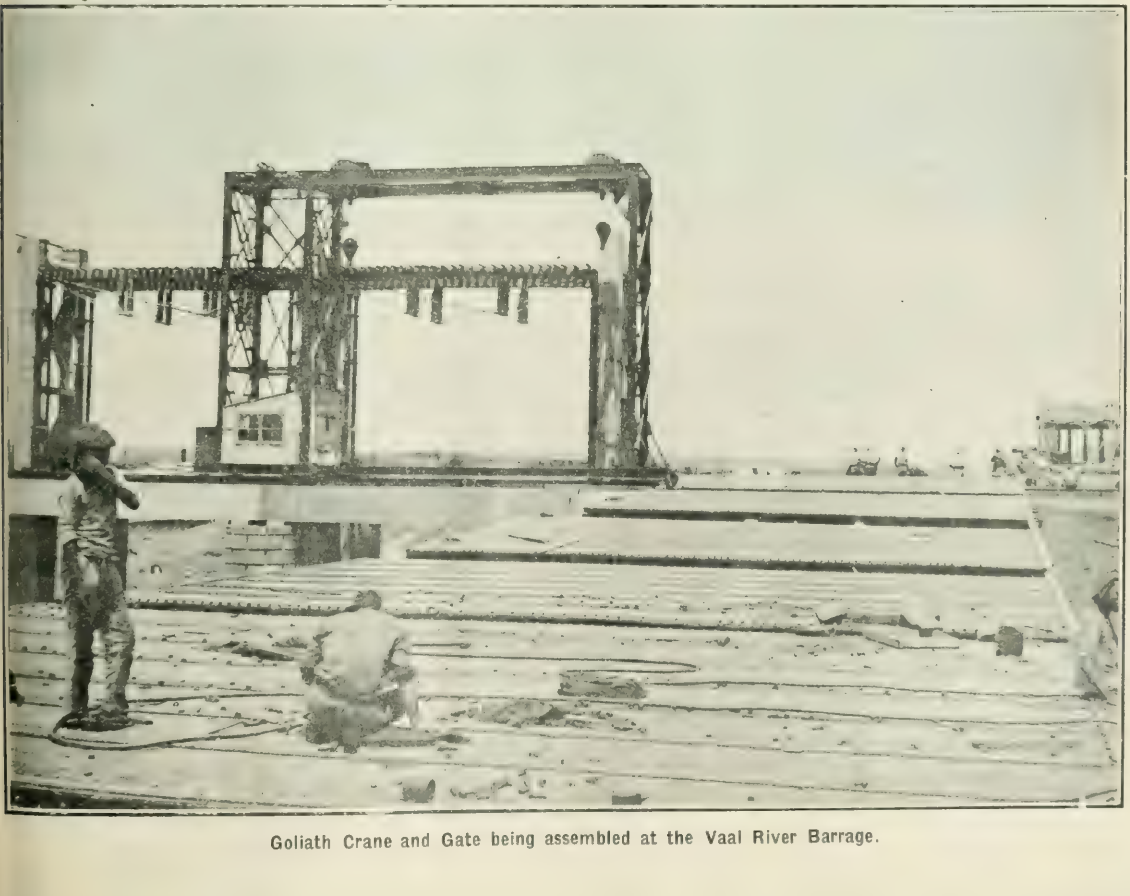
ENGINEERING SECTION.

The Rand's Great Water Undertaking.

CONSUMPTION OF WATER—THE NEW VAAL RIVER SCHEME—A SATISFACTORY JOB—COAL SUPPLY TO PUMPING STATIONS.

In the course of his annual report for the year ended March 31, 1922, Mr. W. Ingham, chief engineer to the Rand Water Board, writes:—

The greatest quantity of water sold during the year in any one month since 1905 was 359·057 million gallons in October, 1921, and the minimum was 272·785 million gallons in February, 1922. The maximum and minimum daily demand was 13·691 million gallons on the 19th December, 1921, and 8·400 million gallons on 12th February, 1922, respectively. The minimum monthly demand by the mines from the Board's sources during the year was 98·681 million gallons in February, 1922, and the maximum monthly demand was 153·208 million gallons in November, 1921. The any one day were 5·966 million gallons on the 30th July, 1921, and 3·098 million gallons on the 22nd January, 1922. Johannesburg Municipality: The maximum monthly demand was 142·323 million gallons in January, 1922, and the minimum demand was 117·777 million gallons in May, 1921. The maximum daily demand was 5·529 million gallons on the 19th December, 1921, and the minimum daily demand was 2·964 million gallons on the 9th September, 1921. Other municipalities: The consumption by the Municipalities of Germiston, Boksburg, Benoni, Springs, Brakpan, Roodepoort-Maraisburg and Krugersdorp, has remained fairly constant, but as improvements are being carired out in the various towns, the demand will steadily increase in the near future. The maximum daily demand was 1·125



Goliath Crane and Gate being assembled at the Vaal River Barrage.

million gallons on the 27th October, 1921, and the minimum was [illegible] on the 8th May, 1921. South African Railways.—Since the Act of 1914 came into force, the South African Railways have taken their supplies direct from the Board. The demand by the railways is keeping fairly steady. The maximum and minimum daily demands were respectively 1·157 million gallons on the 29th July, 1921, and 0·818 on the 8th May, 1921. Other consumers.—The maximum daily demand was [illegible] million gallons on the 27th October, 1921, and the minimum 0·122 million gallons on the 31st July, 1921. The sterilisation of water at Zwartkopjes is being carried out by sodium hypochlorite produced electrically from common salt, while ordinary commercial chloride of lime is being used at Springs and Zuurbekom. In practice it is found that electrically produced chlorine is more effective in sterilising the water than chloride of lime.

Vaal River Barrage.

The work at the Barrage is proceeding in a satisfactory manner, and the whole of the reinforced concrete work for the superstructure and balance boxes will be finished by the end of June. The quantity of concrete placed in the work up to the end of March was as follows: Barrage—Mass concrete, 35,982 cubic yards, reinforced concrete 2,888 cubic yards; Government Road Bridge—Mass concrete 1,439 cubic yards, reinforced concrete 475 cubic yards; total, 40,784 cubic yards. The balance boxes, which weigh 32 tons each, are being constructed of reinforced concrete. These will be finished about the end of June, and when filled with stone and sand will weigh 62 tons each. The superstructure is constructed of reinforced concrete and each span weighs over 60 tons. This work will carry the operating machinery for the gates. The superstructure will be finished by the end of May.

Barrage Gates Contract.

The erection of the gates was commenced on the 13th June last, and on the 11th November the Goliath crane was given a trial run, and on the 15th December the first gate was lifted and conveyed to bay No. 23. The general progress was slow up to the time of the strike, but since the strike ended on March 20th greater progress has been made on the gates and the operating machinery is also now being assembled. On the 31st March six gates were in position between the piers and the two spare gates and two other main gates were ready for fixing. The whole of the gates and appurtenances have been well made, and the manufacturers are to be congratulated on the excellent workmanship. The contractors are also to be congratulated on the manner in which they are carrying out the erection of the plant. The operating machinery works very freely, and the job will be a satisfactory one when completed.

Government Road Bridge.

This bridge, which will be about 1,400 feet long, is made up of 36 spans with a clear span of 38 feet each. The road will be 10 feet wide between curbs, and the width between side railings 15½ feet. A passing place for bullock wagons has been provided in the centre of the bridge, and this is 17½ feet wide between curbs and 23 feet between railings. The Board is building this bridge on behalf of the Union Government at cost price plus 10 per cent. This bridge will serve as a connecting link between the Transvaal and the Orange Free State. The cost will be about £27,500.

River Pumping Station and Intake.

This building is nearing completion, and it is situated on the Vaal River about one mile from the main pumping station site and about the same distance below the Vereeniging railway bridge. The pumping plant which will be in-maximum and minimum quantities taken by the mines on stalled in this building will be of the vertical spindle centrifugal type driven electrically by current generated at the main station. Before entering the pump sumps the water will pass through fine screens which will remove all floating matter and large particles of sand and mud. The lower portion of the building was constructed departmentally and the upper portion by contract.

Main Station—Vereeniging.

A service reservoir containing 5 million gallons is practically completed. It is constructed of reinforced concrete and is 300 feet in diameter and 13 feet in depth. This will serve as a reserve for the pumping plant to draw from should the sedimentation and filter plant be shut off for any cause. The cost of this reservoir will be £13,500, and is being constructed by the O.F.S. Concrete Construction Company.

Sedimentation Tanks.

Four tanks 260 feet long by 70 feet wide and a depth of 9½ feet are being constructed at an estimated cost of £16,613. Sulphate of alumina will be used for throwing down the silt and the coagulant also carries a large number of organisms with it during deposition. The four tanks contain 800,000 gallons each, or sufficient for storing 64 per cent. of a day's supply. The work is being carried out under contract by Mr. Birnie.

Filter Plant.

This plant is now on order from Messrs. Blane & Co. at a cost of £15,358, and will have a capacity of 5½ million gallons per day. The plant will be of the Paterson type and will be delivered about the end of July. Tenders will shortly be invited for the filter house, etc.

Forest Hill Service Reservoir.

This reservoir, which was completed in October last, is built of mass concrete and has a capacity of 5 million gallons. It is situated at a height of 5,905 feet above sea level and is 141 feet higher than the old Turffontein Nek reservoir. Owing to the higher elevation it will be possible to reduce the quantity of water pumped at present from the Village and Paarlshoop statons. The contractors were Messrs. the F. & P. Concrete and Engineering Company, Ltd., and the cost for engineering only was £13,113, or £2 12s. 6d. per 1,000 gallons. The site on which the reservoir was constructed has an area of 3½ acres and cost £1,050.

Zwartkopjes Reservoir.

This reservoir was completed in September last and has also a capacity of 5 million gallons. It has been constructed of reinforced concrete on a site immediately adjoining the existing reservoirs at Zwartkopjes, and will serve as a standby in case of repairs being required to the trunk main from Vereeniging, and will also tend to lower the temperature of the water required for condensing purposes. The contractors were Messrs. Fraser and Chalmers (South Africa), Limited, and the cost was £15,257, or £3 1s. 1d. per 1,000 gallons.

Work Still to be Carried Out.

The following work has still to be put in hand in connection with the Vaal River Scheme: River Pumping Station—Guides and screens, cast-iron pipe specials, power transmission line from main station to river pumping station; Main Pumping Staton, Vereeniging — Foundations for Turbo pumps and alternators, station piping (suction and delivery), station water supply, coal conveyor plant, station lighting; Staff Quarters, Vereeniging—One pair semi-detached cottages; Precipitation and Filter Plant—Sludge pumps and motors, sludge well and building filter house and offices, lighting, chlorination plant; Reservoirs—Collecting reservoir in connection with filters and concrete work for filters; Laying-out Grounds—Storm water drainage and sludge pipe line; Pipe Line—24-inch bye-pass at the Village Main Reef pumping station; Extensions at Zwartkopjes—Coal conveyor plant and alterations to flues; Transmission Lines and Instruments—This matter is under discussion with the Irrigation Department and the Water Court, and the work will be carried out as soon as a definite understanding is arrived at. The plans and specifications for the whole of the above work are well advanced and will be ready before the pipe lines are completed. It is estimated that the construction work will be finished about the end of April, 1923.

Summary of Particulars Regarding Barrage.

The principal particulars of the Barrage are given below.

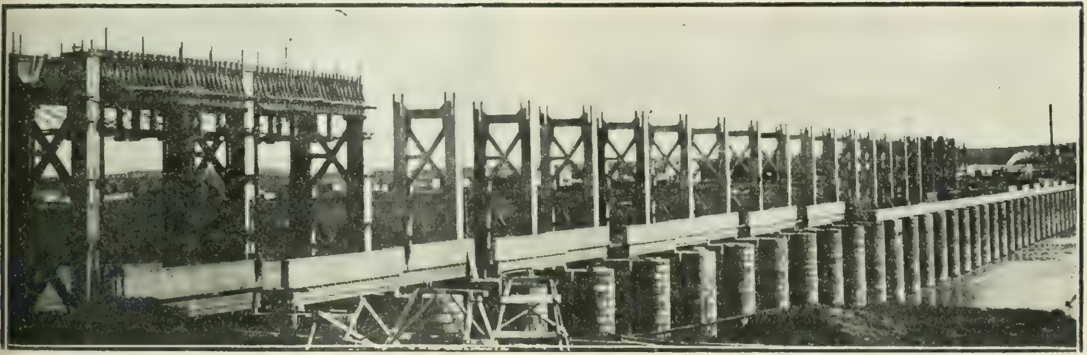
Class of Work.	Cubic Yards to end of March
Excavation .. .	275,000
Stone crushed for concrete	42,200
Sand	20,400
Concrete	40,784
	Tons to end of March.
Cement	10,000
Materials transported by road to the Barrage from Vereeniging ...	19,500
Estimated cost of Barrage ...	£450,600
Estimated cost of Barrage and Government Road Bridge ..	£477,000

Particulars of Reservoir and Barrage.

Length of reservoir, 40 miles; contents, 13,633,000,000 gallons; number of gates, 36; depth of water at gates, 25 ft. 1 in.; size of gates, 30 ft. wide and 25 ft. deep; weight of each gate, 26 tons; total weight of each gate and appurtenances, 100 tons; length of Barrage, nearly 1,400 ft.

Cost of Scheme.

The total estimated cost of the first 5 million gallons per day is £1,525,000.



Another View of the Vaal River Barrage in course of construction.

Meters.

The total number of meters in use at present is 402, as compared with 394 at the end of March, 1921. The class and number of meters installed of each type are as follows: Venturi, 7; Palatine, 4; Bee, 295; Kent, 84; Empire, 6; Tylor, 1; Frost, 1; Siemen's and Halske, 1; Niagara, 3; total, 402.

Supply of Coal to Pumping Stations.

The contract which the Board entered into with the Transvaal Coal Owners' Association, Limited, in 1919, for the supply of coal to its pumping stations, for a period of three years, expires on the 30th June next. The coal for Zuurbekom and Paarlshoop is supplied from the Clydesdale Colliery, Coalbrook, O.F.S., and for the Village Main station from the Landau Colliery, Witbank. The Zwartkopjes supply is obtained from the Clydesdale Colliery, Coalbrook, and also from collieries in the Witbank district. During the recent industrial disturbances, which culminated in the declaration of Martial Law on the 10th March, the Board was able, owing largely to the many sources of supply at the disposal of the Transvaal Coal Owners' Association, Limited, to maintain at all times an adequate supply of coal to its various pumping stations. The coal miners ceased work on January 1st and the gold miners on January 10th. During the latter part of December, when it became apparent that the coal miners would not resume work early in the New Year, instructions were given to the Association to considerably increase the coal supply to the Board's various pumping stations. When these instructions were issued the Board had approximately 1,628 tons in stock, or sufficient to maintain its water supply operations at all stations for a period of 11 days. The supply was then gradually increased until the 26th January, when the stock in hand amounted to a total of 4,215 tons, or sufficient to keep the stations working for 30 days. At Zwartkopjes pumping station it is usual to stock about 1,200 tons of coal, but on the 26th January approximately 3,175 tons were in the bunkers. On that date smoke was observed to issue from the coal, and it was found necessary to reduce the daily deliveries until such time as the coal immediately in front of the boilers was used. Accordingly, the stock was reduced to about 2,000 tons, representing 17 days' supply, when pumping at the rate of 11 million gallons of water per day. Subsequently, however, deliveries were again increased, and on the resumption of work at the collieries the Board had sufficient coal in stock to maintain its normal pumping for a period of 22 days. It may be observed that during this period of disruption the Board's coal supplies were obtained from no less than seven different collieries, the distribution of whose output is controlled by the Association. The total tonnage of steam coal delivered during the year to its permanent pumping stations at Zwartkopjes, Village Main and Paarlshoop, was 54,376 tons, as compared with 52,227 tons during the previous year. This shows an increase of 2,148 tons, due mainly to the increased stocks maintained during the strike. In addition to the coal referred to, a further quantity of 2,994 tons was supplied from the Largo Colliery to one of the Board's temporary pumping stations in the Springs district. The total cost of the coal delivered at the adjacent railway stations or sidings for use at pumping stations was £24,249, as compared with £21,258 last year. The average price paid for coal delivered as stated above during the period under review averaged 8s. 11·03d. per ton, as compared with 8s. 1·685d. last year, which shows an increase of 9·345 pence per ton. The price paid is based on the evaporative duty of the coal, and the increase in the avrage price per ton is largely due to the fact that a larger percentage of the supply was drawn from collieries in the Witbank district than has been usual in the past, and to the higher railage paid on Witbank coal by reason of its geographical position in relation to the Board's pumping stations when compared with Coalbrook. It should be observed that the railage rates on coal, which were increased on the 1st October, 1920, between 8d. and 1s. per ton, have since been maintained. The amount paid by the Board during the year as a result of these increases was approximately £2,145, which represents an average of 9·46 pence per ton on the coal supplied during the year. The cost of haulage over sidings and transport from railway stations to the pumping stations was £2,176, or 9·60 pence per ton, which is 0·13 pence per ton more than last year. The total cost of the coal delivered in the bunkers at the Board's permanent stations during the year was, therefore, £26,425, or an average of 9s. 8·63d. per ton, as compared with £23,319, averaging 8s. 11·15d. per ton, during the previous year.

HEAD, WRIGHTSON & CO. (South Africa), LTD.

P.O. Box 1034. — **JOHANNESBURG.** — **Telephone 3524.**

SPECIALISTS IN

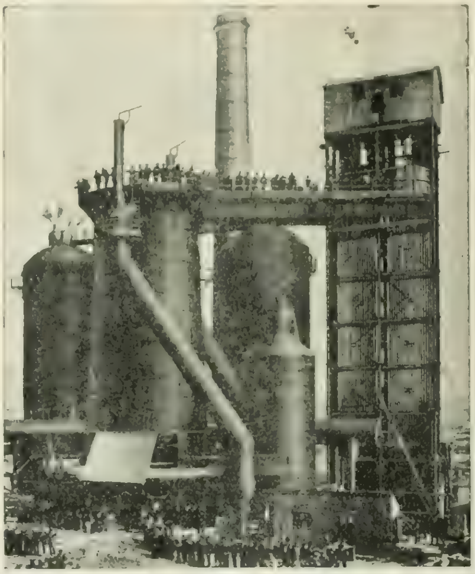
Blast Furnace Plant,

GOLD & COAL MINING PLANT,
COAL WASHING PLANTS, &c.

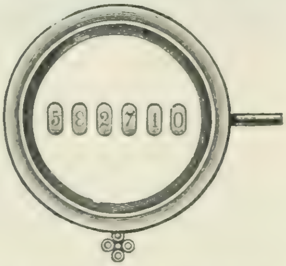
Send for Descriptive Catalogues.

JOHANNESBURG OFFICE:

64-66, STANDARD BANK CHAMBERS,
COMMISSIONER STREET.



JOHN DAVIS & SON (DERBY), LTD.



REVOLUTION COUNTERS

LIKE ALL OF THE MANY OTHER WELL-KNOWN DAVIS-MADE PRODUCTS, THIS HARDING'S PATTERN COUNTER IS THOROUGHLY RELIABLE, WELL MADE THROUGHOUT, AND BUILT TO GIVE LONG SERVICE. THE CASES ARE ROUND, THE WHEELS ARE OF PORCELAIN, AND THE FIGURES ARE BURNT IN. TWO SIZES ARE STOCKED: 5 INCH DIAMETER WITH SIX FIGURES, ROTARY OR RECIPROCATING TYPE; AND 9 INCH WITH SEVEN FIGURES, WHICH CAN BE SET BACK TO ZERO.

SOLE AGENTS FOR SOUTH AFRICA:

BARTLE & COMPANY, LTD.,
Loveday House. P.O. Box 2466. 'Phone 3553. Wires: "FAGGOT."
JOHANNESBURG.
And Box 444, Kimberley. Box 1228, Durban.

£1,000,000,000.

In commemoration of the production in the Union of South Africa of minerals to the aggregate value of One thousand million pounds sterling,

The South African Mining and Engineering Journal

HAVE NOW IN PREPARATION A
SPECIAL YEAR BOOK FOR 1922-23.

Which will be a complete illustrated work of reference, containing all facts and figures relating to the South African Mining Industry, its technology and trade, and including valuable maps, diagrams, mine plans and statistical annexures, compiled by experts.

In 20 parts complete in one large and handsomely produced volume.

PRICE 10/6. POSTAGE 1/6 EXTRA.

Order early from the Publishers:
S.A. MINING & ENGINEERING JOURNAL,
176-180, Stock Exchange Building,
Telephone 913. P.O. Box 963.
JOHANNESBURG.

June Gold Output: Group Returns.

CENTRAL MINING/RAND MINES GROUP.

The following are the results of operations at the mines of the Central Mining Rand Mines group for the month of June, 1922:—

Company	Tons Crushed	Yield in [illegible]	[illegible]	Estimated Profit.
City Deep, Ltd.	86,000	36,513	£165,676	£51,850
Cons. Main Reef ..	44,600	15,871	72,015	6,734
Crown Mines	172,000	53,049	240,709	42,768
Durban Road. Deep...	27,500	9,321	42,296	1,558
E. Rand Prop.	106,500	28,648	129,856	8,410
Ferreira Deep	26,200	7,094	31,781	*1,385
Geldenhuis Deep	52,787	12,714	57,521	*2,618
Knight Central	28,500	5,833	26,469	310
Modder B.	60,000	32,665	148,217	81,629
Modder East	25,500	10,283	46,316	4,086
New Modder	106,000	48,183	218,630	120,453
Nourse Mines	43,800	13,982	63,260	5,592
Robinson G.M. Co. ..	14,500	4,904	22,253	6,086
Rose Deep	47,200	12,360	56,086	9,295
Wolhuter	32,500	7,889	35,795	2,512
Village Deep	54,100	16,632	75,470	12,505
Totals and Averages	927,687	315,851	£1,432,350	£349,785

* Loss.

Working Costs.—City Deep, 26s. 5.7d.; Cons. Main Reef, 29s. 3.3d.; Crown Mines, 23s. 0.2d.; Durban Roodepoort, 29s. 7.5d.; East Rand Prop., 22s. 9.7d.; Ferreira Deep, 25s. 3.8d.; Geldenhuis Deep, 22s. 9.4d.; Knight Central, 18s. 4.3d.; Modderfontein B., 22s. 2.4d.; Modderfontein East, 33s. 1.5d.; New Modderfontein, 18s. 6.3d.; Nourse Mines, 26s. 4.0d.; Robinson G.M. Co., 22s. 3.6d.; Rose Deep, 19s. 9.9d.; Wolhuter, 20s. 5.8d.; Village Deep, 23s. 3.3d. Average, 23s. 4.1d.

General Note.—The valuation of gold has been taken at £4 10s. 9d. net. The costs of all companies have been increased on account of an increase in the assessment for the quarter under the Miners' Phthisis Act.

CONSOLIDATED GOLD FIELDS.

The following are particulars in regard to the outputs of the producing mines of the Consolidated Gold Fields group for the month of June:

Company	Stamps Running	Tube Mills Working	Tons Crushed	Gold Declared Fine ozs.	Total Profit Declared, including Sundry Revenue
Simmer and Jack..	320	7	40,100	10,491	*£2,438
Robinson Deep ..	160	10	60,700	17,430	15,634
Sub Nigel	30	2	10,000	6,050	5,962
Totals	510	19	110,800	33,971	£19,158

* Loss.

Gold in Reserve.—Robinson Deep, 2,495 oz.; Sub Nigel, 2,108 oz.; total, 4,603 oz.

The revenue derived from gold for the month of June is calculated at the rate of £4 12s. 6d. per fine oz., less estimated gold realisation and exchange charges of 1s. 6d., or a net figure of £4 11s. per fine oz.

BARNATO GROUP.

The following are the results of operations at the Barnato group of mines for the month of June:—

Mine.	Tons Crushed.	Revenue from Gold. £	Total working Costs £
Consolidated Langlaagte .	35,900	48,188	44,456
Government G.M. Areas ..	141,000	285,522	131,078
Langlaagte Estate	42,300	63,908	51,370
New Primrose	17,800	19,450	18,148
New Unified	10,600	11,600	9,830
Randfontein Central	119,500	163,196	132,938
Van Ryn Deep	55,100	122,301	61,874
Witwatersrand	39,600	50,764	40,054
Totals and Averages ...	£461,800	£764,929	£488,748
May Totals	£430,900	£718,666	£447,982

Mine.	Working Costs per Ton Milled. Shillings.	Gross Profit including Sundry Revenue £
Consolidated Langlaagte	24·766	5,662
Government G.M. Areas	18·593	155,171
Langlaagte Estate	24·289	12,807
New Primrose	20·391	1,414
New Unified	18·547	1,827
Randfontein Central	22·249	31,499
Van Ryn Deep	22·096	62,036
Witwatersrand	20·229	11,580
Average and Total	21·167	£281,996
May Average and Total	20·792	£276,138

The above results are arrived at by calculating the gold at £4 12s. 6d. per fine oz.

CONSOLIDATED MINES SELECTION GROUP.

The following are the results of operations for the month of June, 1922:—

	No. of Stamps Working	Tons milled	Working Costs per ton milled s.	d	Value of Gold Declared £	Yield per ton s.	d.
Brakpan	120	58,000	24	6·1	£109,077	37	7·4
Springs	80	43,000	25	8·5	78,590	36	6·6
Totals & Average	200	101,000	25	0·2	£187,667	37	1·9

	Working Profit based on standard value of Gold Total £	per ton s.	d	Estimated Premium taking gold at £4 12 0 per fine oz. less Exchange on Remittances £	Total Estimated Profit £
Brakpan	£38,003	13	1·3	£7,880	£45,883
Springs	23,315	10	10·1	5,643	28,958
Totals & Averages	£61,318	12	1·7	£13,523	£74,841

WITWATERSRAND DEEP.

The estimate of results for the month of June, 1922, is as under:—Tons milled, 32,800; gold recovered, 10,663.009 ounces; average of stamps running, 180; stamps' running time, 20.404 days; tube mills, 5.

The working expenditure, including Head Office charges for the month, is £38,176 or 23s. 3d. per ton. The estimated working revenue, based on an estimate of £4 12s. 6d. per fine oz. (less 1s. 9d. realisation charges), is £48,336 or 29s. 5d. per ton. The net estimated working profit is £10,160 or 6s. 2d. per ton.

GENERAL MINING AND FINANCE CORPORATION.

The following are the results of operations at the mines of the General Mining and Finance group of companies for the month of June:—

Company.	Tons crushed.	Total cost. £	Cost per ton. s.
Aurora West	8,740	10,988	25.14
Meyer and Charlton	13,800	16,406	23.78
New Goch	15,800	16,066	20.34
Roodepoort United	9,400	9,928	21.12
Van Ryn Estate	32,200	34,543	21.46
West Rand Consolidated	31,000	37,948	24.48
	110,940	£125,879	22.69

Company.	Total revenue. £	Profit. £
Aurora West	£12,544	£1,556
Meyer and Charlton	36,595	20,189
New Goch	17,064	998
Roodepoort United	8,528	Loss 1,400
Van Ryn Estate	42,634	8,091
West Rand Consolidated	41,957	4,009
	£159,322	£34,843
	Less loss	1,400
		£33,443

In calculating the revenue, gold has been taken at a value of 92s. 6d. per fine oz., less estimated realisation charges.

UNION CORPORATION GROUP.

The following are particulars of the operations on the producing mines of the Union Corporation group for the month of June, 1922:—

Company.	Stamps.	Tons Crushed.	Fine Ozs.	Revenue (Including Sundry Rev) Total	Revenue (Including Sundry Rev) Per ton. s. d.
Geduld Proprietary	100	44,600	16,257	£75,732	33/11
Modder Deep	70	43,300	23,180	106,829	49/4
Totals and Averages	170	87,900	39,437	£182,561	41/6

Company.	COSTS. Total. £	COSTS. per ton. s. d.	PROFIT. (including Sundry Rev.) Total. £	PROFIT. (including Sundry Rev.) per ton. s. d.
Geduld Proprietary	£46,250	20/9	£29,482	13/2
Modder Deep ..	41,154	19/0	65,675	30/4
Totals and Averages	£87,404	19/10	£95,157	21/8

The above results are arrived at by valuing gold at 92s. 6d. per fine oz. Realisation charges in excess of normal are debited direct to revenue.

Brewery Profits.

The report of Ohlssons South African Breweries shows that the net profits for last year were £42,672, which, with the amount brought forward, makes the available sum of £73,130. After deducting the usual charges, dividend on preference shares, and providing for depreciation of plant, a balance of £6,581 is carried forward. The report states that the business has been carried on under most unfavourable conditions throughout the year, and under these circumstances no distribution on ordinary shares is possible. The South African Breweries showed a net profit last year of £273,700, against £241,200 the previous year. The total available for disposal is £306,800. A dividend is declared on ordinary shares of 11¼ per cent., and £30,800 is carried forward. The directors state that the increased profit is due mainly to the reduced cost of raw material and further economies being persistently effected in the working of the business.

Walvis Bay Development.

The Railway Board's report in reference to Walvis Bay improvements is now published. It incorporates the report of Mr. G. T. Nicholson, Harbour Advisory Engineer. The scheme provides for a wharf a thousand feet in length, an approach to the channel 500 feet in width, with a depth of 30 feet at low water, and a channel in front of the timber wharf 800 feet in width, dredged to a depth of 33 feet. The scheme is estimated to take from two to two and a half years to complete from the commencement of dredging operations. The engineer does not expect that difficulty will be experienced from silting. The total estimated cost is £599,500, including timber wharves £60,000, dredging entrance to the channel £262,500, bucket ladder dredged with two steam hoppers, £176,000, together with interest during construction. The Board recommends that works be subject to the conditions that the Administration of South-West Africa pays interest on expenditure during construction and guarantees interest on capital, less any amount available therefor after working expenses have been met.

* * *

Financial.

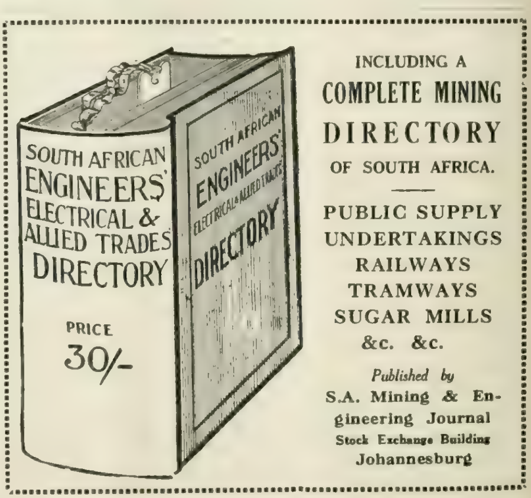
The cable news just to hand from London that the Johannesburg Municipal Loan of £1,000,000 has already been over-subscribed is very satisfactory and has given much satisfaction in financial and other circles. Subscriptions were invited at 5½ per cent. in inscribed stock, issued at 100 per cent., and the flattering reception accorded the same by the London financial press gives us heart of grace. Dealings in the stock in London have risen to half per cent. premium. The allotments are on a general basis of 39 per cent.

The Dutch State Loan of 150,000,000 guilders has been largely over-subscribed.

The Pretoria Town Council has agreed to the raising of a loan of £750,000, which it is hoped will be got on terms better than those accorded to the Johannesburg Town Council.

The Niger Company, operating in Nigeria, shows a loss of £836,701 on last year's trading, due to the unprecedented fall in the value of West African produce and in the price of tin.

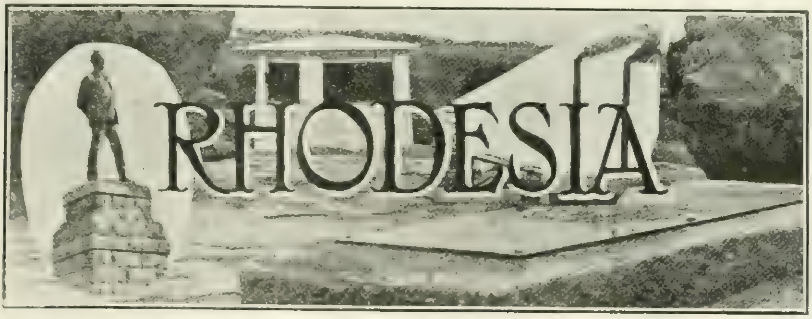
Big projects are, it is said, now approaching consummation whereby Beira is likely to become an important coal bunkering port. A vast area of coal has now been located in the Zambesi Valley, and the scheme of linking the coal area with the new trans-Zambesi line is under consideration. Beira is likely to witness a big expansion shortly in connection with coal, gold, silver and copper exploitation.



INCLUDING A
COMPLETE MINING
DIRECTORY
OF SOUTH AFRICA.

PUBLIC SUPPLY
UNDERTAKINGS
RAILWAYS
TRAMWAYS
SUGAR MILLS
&c. &c.

Published by
S.A. Mining & Engineering Journal
Stock Exchange Building
Johannesburg



The Mineral Industry of Rhodesia.

IMPROVING PROSPECTS—SOME ENCOURAGING FEATURES.

(By our Special Commissioner in Rhodesia.)

The impression I have gained of Rhodesian mining after a tour through both the southern and northern territories at present controlled by the B.S.A. Company, and extending over some weeks and a few thousand miles, is that the mineral industry of the country is slowly but surely recovering from the effects of labour unrest, inordinately high costs and severe declines in the prices of metals and minerals. The recently instituted decrease in white wages has had the effect of reducing working expenses on the larger gold mines by from 6d. to 1s. and even more per ton milled, and there can be no doubt that one consequence of the recent dramatic settlement of the trouble on the Rand has been to largely eliminate an element of potential industrial Bolshevism which has been growing on the Chartered mining belts for some time past.

Generally speaking, Rhodesian mine employees are well paid, well treated and well housed, whilst the social and sports aspects of their lives are admirably catered for by the provision of well-laid-out sports grounds, golf courses, libraries and recreation halls. The Rhodesia Broken Hill Mine has even gone to the length of having a sumptuous country club for its employees.

Beginning to Appreciate their Jobs.

Most of the men employed on the mines are at last beginning to realise that their jobs are worth hanging on to after all—there are a good many "out-o'-works" in the country—and this revival of a sane spirit should have its influence on efficiency.

More Prospecting.

One result of the prevalence of unemployment which has been caused by the general depression, the drought, curtailment of work on the asbestos and chrome-iron mines, and at certain of the gold mines, has been that considerable numbers of men have, by force of economic circumstances, been driven out from the towns into the veld on prospecting expeditions. As a result of this it is reasonable to look forward to one or two new discoveries being made.

New Discoveries.

The failure of the Zebra block in the Gatooma district to blossom into a second or even miniature Shamva has proved a considerable disappointment, but as against this it may be recorded that one or two prospects are opening up well in the Renny-Tailyour Concessions, and it is reported that there has recently been discovered in the Victoria area a "virgin" reef (*i.e.*, a gold carrier not previously worked by the ancients) which has disclosed remarkably high initial values. The merits of this particular proposition are being investigated by two of the leading Rhodesian groups.

Values in Depth.

In so far as the big gold mines are concerned, the location of rich and extensive shutes in depth, as in the Lonely, the Cam and Motor, the Globe and Phœnix and the Rezende, is an encouraging feature, and at least suggests that the old condemnation of Rhodesia—that it is a country in which nothing persists in depth—is not always supported by fact.

Asbestos, Chrome, Lead and Zinc.

The asbestos mines are now beginning to ship considerable quantities of low grade fibre again, and the chrome-iron mines in the Selukwe district are exporting a fair tonnage of ore to Beira. The Wankie Colliery has just recently concluded an agreement for the supply of coke to the Katanga copper mines for the next eight years, and the Rhodesia Broken Hill Mine is continuing to produce large quantities of lead and smaller quantities of vanadium, whilst satisfactory results are being secured from the company's experimental zinc plant.

Taking everything into account, the position of the mineral industry in Rhodesia is substantially better than it has been for some time past, and there is every reason for believing that both development and output figures will exhibit increases in the near future.

Box 3807. **Tel. 5892.**

WRIGHT'S ROPES

H. ALERS HANKEY - - - Sole Agent.

BE ON THE SAFE SIDE
— SPECIFY "SaBeN" —
SHEFFIELD STEELS, FOR
ALL MINING AND GENERAL
ENGINEERING PURPOSES.

"SaBeN"

DRILL STEEL, HOLLOW DRILL
— STEEL, AUGER STEEL,—
"PITHO" OIL - HARDENING
— STEEL, —
"SaBeN" AIR - HARDENING
— STEEL, Etc., Etc. —

ALSO :—SHOES AND DIES, CAM
SHAFT STEMS, SHOES AND
— TAPPETS, TWIST DRILLS,—
REAMERS, GEAR CUTTERS, Etc.

MANUFACTURED BY
SANDERSON BROS. & NEWBOULD
LTD.,
SHEFFIELD.

STEELS

SOLE AGENTS :—
BARTLE & CO., LTD.,
- LOVEDAY HOUSE, -
Box 2466 'Phone 3553
JOHANNESBURG.
AND AT KIMBERLEY & DURBAN

SUCCESSFUL
FINANCIAL PUBLICITY!
CONSULT
THE TECHNICAL PUBLICITY AGENCY.

Advertising Advisers, Contractors and Consultants. Specialised, Concentrated, Wasteless, Advertising Service.

Complete Advertising Campaigns Planned and Handled. "Copy" Prepared. Best Media Chosen. Lowest Prices and Best Positions Secured.

Company Flotations a Speciality.

Phone 913. Box 3723.
177, STOCK EXCHANGE, JOHANNESBURG.

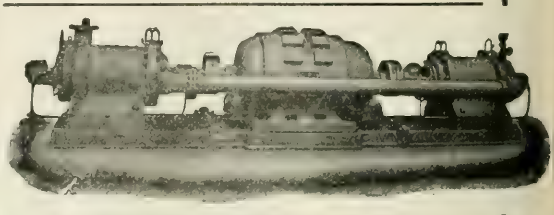
Telegrams : "NIVONIA," Johannesburg.
'Phones : 2196,—2197,—2198

J. & R. NIVEN, Ltd.,
ENGINEERS,
CONTRACTORS,
MERCHANTS.

BALATA BELTING
JAMES DAWSON & SON, Ltd.
BITUMEN SHEETING
GEO. M. CALLENDER & CO., Ltd.
BOILERS
PENMAN & CO., Ltd.
COAL CUTTERS AND CONVEYORS
JEFFREY MANUFACTURING CO.
COLLIERY PLANT
CAMPBELL, BINNIE, REID & CO.
DRILL STEEL
JOHN NICHOLSON & SONS, Ltd.
ENGINES, LOCOMOTIVES
ANDREW BARCLAY, SONS & CO., Ltd.
ELECTRIC LIFTS
A. & P. STEVEN, GLASGOW.
CRANES
BUTTERS BROS., GLASGOW.
HOSE, VALVES, SHEET RUBBER
THE LEYLAND & BIRMINGHAM RUBBER CO., Ltd.
LUBRICANTS
THOS. HINSHELWOOD & CO., Ltd
STEEL SCREENING
THOS. LOCKER & CO., Ltd.

Barsdorf's Buildings, Marshall Street,
JOHANNESBURG.

SULZER
HIGH-LIFT CENTRIFUGAL
PUMPS.
For Mine Drainage, Waterworks, Etc.



Pumping Set suitable for lift of 2,500 ft.

LARGE LOCAL STOCKS IN
MEDIUM AND LOW-LIFT PUMPS.

For particulars apply to:
RICE, WILSON & HERD,
86, 87, 88, 96, Standard Bank Chambers, Commissioner St.
P.O. Box 930 Telephones 2299 & 2300. JOHANNESBURG.

Also South African Agents for
CALLENDER'S CABLE & CONSTRUCTION CO., LTD.
BRITISH THOMSON-HOUSTON CO., LTD., etc., etc.

TRADE AND INDUSTRIES SECTION.

Week in the Mining Material and Engineering Trades.

BUSINESS SLOW, BUT PROSPECTS GOOD—IRON AND STEEL—GOVERNMENT'S IRON AND STEEL BOUNTY SCHEME—BRITISH TRADE CONDITIONS—ELECTRICAL GOODS—NEW ELECTRICITY BILL—UNION'S GRAIN ELEVATORS—UNION'S FINANCES—AMERICAN NOTES—UNION AND RHODESIA'S PROVISIONAL AGREEMENT—OIL—WIRELESS—FINANCIAL—METAL QUOTATIONS.

General.

Things at the moment, said a very influential commercialist this week, are not too good, and there is a feeling in commercial circles that we are only now feeling the results of the disastrous strike period. The Commercial Exchange during the past week has exhibited little activity, and the total amount of business transacted has been poor. One of our biggest importers said he could not account for the present state of stagnation in business unless one assumed that the mines had introduced a system of rigid economy, bringing down business requirements to a level which was undreamed of 12 months ago. He said that nowadays importers were absolutely unable to gauge future requirements, and that merchants to-day were wise on the side of indenting very small quantities.

It appeared to him that the mines were now accustoming themselves to ordering less than hitherto, and this, while of course upsetting general calculations, was all to the good in the long run; the bigger merchants would eventually score. Business was undoubtedly gradually recovering, and he looked confidently to the end of the year to see commercial affairs on a very sound footing and to the weathering of the storm caused by the opening months of the year. But, despite the present dullness, said one of our cleverest business experts, signs are already apparent that we have definitely turned the corner of the depression resulting from the recent labour troubles, and every week confirmed the prognostications—so far perhaps unduly optimistic—that we are on the eve of better times. The whole fabric of conditions, he said—what with the Government loan of £4,000,000, the Johannesburg Council's £1,000,000, the new port in Zululand, the grain elevators now being erected in the Union—is working towards betterment. The aftermath of the strike we were now experiencing, and would undoubtedly feel for a month or two longer, but he was confident that before the end of the year we should see a return to normal and more satisfactory business conditions. The great drawback to-day to business conditions is the absence of ready money, which is making itself keenly felt from top to bottom.

Perhaps never in the history of the Rand (and some happenings have occurred here during the past 35 years) has the want of the ready money been so apparent as at the present time. Is it too much to hope that the leaders of the Trade Unions—or at any rate the extremists—in view of the present calamitous state of things, may in future pause, and for no inconsiderable time, before launching the country into such a pit of worry, poverty and distress? *Verb. sap!*

A leading importer, in the course of a chat, said that things are of course a little better than they were, but not what they could be, and indeed was generally expected. Prices are, however, he said, reaching a level now there is every indication that in some lines we are going to see an advance. Business to-day, he said, was unremunerative, there was no profit attached to it. Naturally merchants could not go on indefinitely on the present lines, and the time must come when importers would seek legitimate profits. Money, he said, was becoming a little easier, but was still inclined to be a little tight. The most satisfactory feature of the week is the meeting arranged for to-day between the Chamber of Mines and the Trade Unions, which leads to the hope that beyond their academic report the Commission hopes to achieve some practical result from their labours.

European Affairs.

Things seem to have come to a deadlock at the Hague. Premier Lloyd George has announced that a special British delegation will leave for America in September in connection with negotiations for funding the British debt to the United States. In the meantime the German position remains unsatisfactory, and until some solution is come to no definite stabilisation in Europe or elsewhere can be expected

Iron and Steel.

Business during the past week has again been on the slow side; the Commercial Exchange has not been favoured with many orders from the mines, and generally things have been standing. Merchants, however, are looking to a return to normal within two to three months.

Latest quotations.—Dunswart iron, 18s. to 23s. per 100 lb.; Union Steel Corporation, Limited, 19s. to 22s. 6d.; imported iron and steel, flats, rounds and squares, from 25s. 6d. to 35s.; channels and joists, 25s. to 28s.; imported angles, 22s. 6d. to 30s.; tee iron, 32s.; shafting, ⅜ in. down to 3-16 in., 7½d. to 9d. lb. ⅝ to 1½ in., 6½d.; 1¾ in. to 6 in., 4d.; steel plates, 1-16, ⅛, 3-16, 18s. 9d. to 21s. 6d.; 10 x 5 and larger, 25s.; ¼ to ¾, 21s.; spring steel, 7d. to 8½d. lb.; bolts and nuts, hexagon, ⅜, 7 5-16d. lb.; ½ in., ⅝ and ¾, 33s. 6d. to 47s. 6d. per 100 lb.; hexagon nuts, ⅜, 8½d.; ½ in., ⅝ and ¾, 7½d.; fish plate bolts and nuts, ⅜ in., 6d. lb.; ½ in, 4d. to 4¼d.; ⅝ in. and ¾ in., 3¾d.; dog spikes, 26s. 9d. to 27s. 9d. per 100 lb.; rivets, ¼ in., 6 5-16d.; ⅜ in., 5d.; ½ in and ⅝ in., 37s. 6d. to 40s. per 100 lb.; ⅝ in., 50s.; brass rods, ¼ in. 1s. 5d.; ⅜ in, 1s. 3d.; ½ in. 1s. 2d.; ⅝ in. upwards, 1s. 1d. lb.; hexagon brass rods 1d. lb. extra; copper rods, ⅜ in. 2s.; ½ in. 1s. 11d.; ⅝ and upwards, 1s. 9d. lb.; tool steel, 2s. 11d. to 3s. 3d.; brass sheets, 1s. 10d. to 2s. lb.; copper sheets, ¼ in. to 18 gauge, 1s 10d. lb.; 20 gauge, 1s. 11d.; 22 gauge to 28 gauge, 2s. lb.; firebox copper, 2s. lb.; copper tubes, ¼ in., 3s. 3d.; ⅜ to ⅝ in., 2s. 6d.; ¾ to 4½ in., from 2s. to 2s. 4d. lb.; phosphor tin. 2s. 7d.; ingot tin (Lamb & Flag). 1s. 9d. lb.; ingot lead £28 per ton: drill steel, 5½d.; hollow, 7d. to 8d.; 1¼ in., 6½d. to 8d.; wire nails, 30s. to 35s.; shovels, 27s. 6d. to 46s. 6d. doz.; wheelbarrows, 40s.; picks, 35s. to 40s.; pick handles, 26s. to 30s.; hammer handles, 14 in., 4s. 10d. to 5s.; 18 in., 7s.; 24 in., 8s. 6d. to 10s. 6d.; 30 in., 15s. to 18s.; 36 in., 30s.; piping, ¾ in., black, 4¾d.; 1 in., 5¾d.; 2 in., 1s. 1d.; galvanised, ¾ in., 5d.; 1 in., 7¾d.; 2 in. 1s. 7d.; ¾ in. steam, 5¾.; 1 in., 8d.; 2 in., 1s. 6d.; linseed oil, 6s. 6d. to 7s. per Imp. gallon, white lead, 71s. per 100 lb.; barbed wire, "Shorthorn," 69 lb., 13⅜ gauge, 19s. 6d. to 21s. per coil; plain galvanised fencing wires, No. 8 gauge, 100 lb. coils, 21s. 6d. per coil; No. 10 gauge, 100 lb. coils, 24s. 6d. per coil; No. 12 gauge, 100 lb. coils, 26s. 6d. per coil; bulb tee fencing standards, 14 lb., 19s. 6d. per dozen; 12 lb., 23s. 6d. per dozen; black baling wire, 14 gauge, 19s. per coil, 100 lb.; 12 gauge barbed wire, 22s. per coil, 96 lb.;

plain wire, No. 8 galvanised, 21s. per coil, 100 lb.; fencing standards, 21s. to 22s. and 24s. to 31s.; droppers, 40s. per 100; screening, 3s. to 9s. 6d. per square yard; [illegible]

Iron and Steel Bounty.

In moving the second reading of the Iron and Steel Industry Encouragement Bill in the House, the Minister of Mines and Industries, emphasised the fact that if any industry could be called a key industry it was the iron and steel. He stated that experience from Canada, Australia and other countries showed that to get this key industry established required some assistance from the State. One of the chief reasons was, he said, that a very large capital is required for the estabilshment of an efficient industry for the production of iron and steel from the raw products of the country to compete with more developed countries which go in for mass production, which almost prohibits new countries coming in on an equal footing with them and competing successfully. The Government had consequently entered into an agreement with the Union Iron and Steel Corporation (S.A.) Ltd., for the working of scrap iron. Previous to this scrap iron had been sent out of the country; now it was being worked at Dunswart and at Vereeniging. In 1918 the Union Steel Corporation had erected a blast furnace and produced 800 tons of pig iron, which since had been very materially increased. He referred to the furnace established at Newcastle, Natal, which, owing to failure of capital before the producing stage, had failed of success. The crux was, Mr. Malan said, not that we had not the raw material in the country, but that we wanted capital. The Government had been approached to find the necessary capital and had come to the conclusion that the best course was to adopt the bounty system. Mr. Malan stated that in order to earn the bounty a concern must be able to produce at least 50,000 tons of steel yearly, failing which production no bounty would be given. The amount of the bounty, the Minister stated, would be, for the first three years, 15s. on pig iron, and a further 15s. on the pig iron converted into steel. After three years the subsidy would be reduced by 2s. 6d. per annum, so that in 1927-28 the subsidy would become 12s. 6d., in 1928-29 10s., and by 1931-32 it would have disappeared.. In the latter period it was anticipated that the industry would be so fully established as to be able to dispense with State aid. The amount the State would have to pay under the scheme, said the Minister, would of course depend on the export of the industry. The Government anticipated a total amount of 150,000 tons per annum pig iron and steel. According to this the scale for the first three years would be 17s. 6d. instead of 15s., and it was estimated would amount to more than a million. Mr. Malan, however, did not think it likely that for the eight years contemplated by the schedule an average of 150,000 tons of iron and steel would be produced. With regard to the question of advances, the Minister said that during the time of construction the Government would make advances, provided that the amount of the advances was not more than the bounty that would be earned on the production of any one year. The subsidy would come out of the amount of the bounty.

Engineering Shops.

Business in the engineering shops appears to be patchy; while some are fairly busy, others report a falling off in orders.

British Trade Conditions.

The end of the long-drawn-out engineering dispute, it is hoped, will mean a new era in the industry, and that with the co-operation of both sides disputes will in the future be avoided and an early return to activity in the engineering industry be seen.

Coal.

Shipments to South America, India, France and Italy are being well maintained despite the fact that some buyers are holding off in the hope of forcing a lower level of prices. This is not likely to eventuate, as present costs of production exceed selling prices, and some restriction of output is in process which is resulting in extensive unemployment on some fields. D.C.B. steam coal is quoted at 24s. per ton, Tyne primes 22s. 6d., and seconds 20s. 6d.

Iron and Steel.

A rather more cheerful feeling is noticeable, and the opinion is expressed that the termination of the protracted engineering trouble will be followed by the release of a number of orders which have been held in suspense and that the turning point towards greater activity has been reached. Competition from Belgium is more active in some special lines, but is not acute. Prices remain steady and no lower level is looked for. Cleveland No. 3 is quoted at 90s. per ton.

Timber and Building Materials.

Business, said one of the most important timber firms, has not been too good this month, much worse than June month. Stocks are fair, but 3 by 9 deals are rather scarce. Prices locally are practically unaltered, but those coming from the Baltic are very firm with a rising tendency.

Timber prices.—3 x 9 deals, up to 18 teens 1s., over 18 teens, 1s. 1d.; scantlings, 10½d.; beaver boards, 4¼d. to 4½d.; floorings, 6d. to 6¼d.; ceilings, 4¼d. to 4½d.; Oregon, 5s. 6d. a cube; pitch pine, 7s. 6d. to 8s.; corrugated iron, 7⅞d. to 8⅜d. Furniture timber: Burmah teak, 12s. 9d. per cube at coast; American oak, 1 in., 10½d.; 1½ in., 11d.; 2 in., 11½d. at coast; Japanese oak, 11½d. at coast; West African mahogany, 1 in. to 4 in. thick, 26s. 9d. to 27s. 6d. per cube, at coast; Rhodesian mahogany, 9s. per cubic foot at mills; Honduras mahogany, 30s. per cubic foot; American yellow pine, 1s. 4d. per foot of 1 x 12 here; American pine shelving, 10d. per ft.; 3-ply wood, 3 m.m. up to 5 m.m., alder and birch, 4d. to 6½d. per sq. ft.; oak and teak, 3-ply, 10d. per sq. ft. Prices for bricks remain about the same, viz.: Klompje bricks, 25s. per 100 at works; fire-bricks, £10 per 1,000 at works; mixed, 70s.; wire-cuts, £4 10s. to £5; and £5 for pressed per 1,000, at kilns; columns from 20s. to 30s., according to size; roofing tiles, Marseilles, £25 per 1,000 at the works; chimney pots, 12 in., 7s. 6d.; 15 in., 9s.; 18 in., 10s. 6d.; dry red oxide, 16s. per 100 lbs.; white lime, 7s.; blue plaster lime, 5s. 3d.; blue lime, 4s. 3d.; cement, 10s. a bag; damp course and roofing, 36s., 54s. for 1 to 3-ply.

Second-hand Iron and Timber.

Business still remains quiet in the second hand iron and timber yards; stocks are scarce; prices remain at about 6d. for iron and 8d. for timber, but dealers report a weakening tendency.

Electrical Goods.

Business, a prominent dealer this week said, is fair to good, with decidedly better prospects than for some while; inquiries and orders from outside Johannesburg are increasing in frequency and bulk, and everything seems to point to a busy time very shortly. Prices locally are about the same, with, however, a tendency to advance. British prices are on the up grade in sympathy with the ever-rising prices asked from Germany. Don't throw your goods away, was the advice tendered a very large importer, as you will not be able to replace them at present levels. This seems to be the general opinion, and that incoming goods will on an average cost more than present day's prices.

New Electricity Bill.

Thanks to the efforts made by the Johannesburg deputation of the Town Council at Capetown, the re-draft of the Electrity Bill makes the position of the Council now reasonably secure, and the new Bill promises to foster and encourage existing electricity undertakings.

Union's Grain Elevators.

We understand that very satisfactory progress is being made in the erection of the various grain elevators, and it is hoped that the installations generally will be in a position to deal with the 1923 crop.

Union's Finances.

Mr. Burton, in moving the second reading of the Appropriation Bill for 1922-23 in the House of Assembly, Capetown, this week, was very optimistic regarding the Union's future, and he forecasted a very healthy position in respect of the Union's finances within a few months. The balance sheet for this year was likely to be a favourable one. The Union's ability to raise loans was very good.

British Trade Returns for May.

These show imports at 88¼ millions, an increase of 8 millions on April and 2½ millions over May, 1921. Exports, 67 millions against 64½ millions in April and 50½ millions in May, 1921. Raw materials exported show an increase of 8½ millions, of which iron and steel goods account for nearly a million. The figures taken as a whole confirm the indications of a revival in trade previously suggested by the returns for the previous months. Cheering reflections cannot as yet be indulged in regarding the position and prospects of British trade, the great needs of which are stability in labour and in foreign exchanges. The constant succession of strikes in vital industries, with sympathetic effects upon associated industries, have proved an insuperable obstacle to any decided revival in trade, whilst the rapidity and extent of fluctuations in foreign exchanges seriously militate against undertaking commercial contracts with other countries.

Reduction in British Railway Rates.

A general reduction of railway rates will come into force from August 1st next consequent on an agreement between English and Welsh railway companies and the Federation of British Industries.

American Notes.

Fundamental conditions in America are developing towards a normal basis, and considerable activity is shown in the basic industries, with improved distribution. Wholesale quotations demonstrate a decisive upward price trend. The placing of important contracts shows the position in some of the primary markets; offerings for further delivery have been considerably reduced. There is tremendous opposition to the proposed permanent tariff. As previously stated in this journal, the reduction of the Bank of England discount rate was followed in New York, the rate now being 4 per cent. The steel output is maintained, notwithstanding the coal strike, and steady improvement is predicted during the balance of the year, with prices firm. Important amalgamations have been effected.

Automobile Production.

This is on a new high level. May import figures are given at 254 million dollars and exports at 308 million dollars.

Canada.

A general opening up of business is announced, with payments increasing. Manufacturers state that in some cases there is difficulty in keeping pace with orders. The unemployment situation is easier. Iron and steel show a marked improvement. The new sales tax shows an advance of 50 per cent. May imports are given as 66 million dollars, and exports at 69 million dollors. The latest news from America report a very grave industrial crisis, some 600,000 miners, 500,000 railwaymen and 500,000 other workers being on strike. Fears are entertained of a conflict between the strikers and Government troops. The President is prepared to launch the full power of the Government against the strike by taking over the mines and railways, and, if necessary, assisting their operation by the use of military force.

Union and Rhodesia—Reported Provisional Agreement.

The extraordinary general meeting of the Chartered Company is fixed for July 18, at which, the *Financial Times* hints, the shareholders will be asked to endorse a provisional agreement which it is understood Mr. D. O. Malcolm has negotiated with General Smuts. It is rumoured that this provides for the Union purchasing the Chartered Company's railway interests in Rhodesia, the transfer of the company's mineral rights, and a lien on unalienated lands.

The Electricity Bill has passed the third reading in the House of Assembly, Capetown.

Oil Interests in Russia.

The *Temps* states that the Royal Dutch Shell Company has invited representatives of Russian petroleum interests to a conference with a view to considering the resumption of work on the Caucasian oilfields. The chairman of the Shell board of directors is reported to be at the Hague.

Wireless.

An important offer has been made to the Union Government by Messrs. O. F. Elwell, of London, to provide a high-power wireless station capable of communicating direct with England. The firm is prepared to establish such a station and turn it over to the Union Government within 12 months. The station would include masts 830 feet in height and Poulsen arc generators sufficiently powerful to guarantee a service of 25 words a minute over not less than 350 days per year for a sum not exceeding £150,000. An even more powerful station could be built for £200,000.

Dr. Van der Byl, Scientific and Technical Adviser to the Government, advises the Union Government to enter into negotiations with the Marconi Company on the basis of the proposals laid before the House, which, briefly, are that the company spends not less than £400,000 on the proposed station; no monopoly asked for; the Union Government to retain right of acquisition on reasonable terms; rates not to exceed 1s. 4d. for full rate messages, 8d. for deferred messages, 8d. for Government messages, and 2½d. for Press messages.

Industrial Census.

The Census Department publishes the unaudited results of the sixth industrial census of the Union taken in 1922 in respect of the period 1920-21. Industries as a whole show an increase over the figures of the previous census in the number of establishments, the number of employees, the amount paid in salaries and wages, the value of fuel and materials used, and the value of the aggregate output. A decrease was to be noted in the total value of South African materials used. The greater proportion of the increase noted in salaries and wages paid, fuel and material used, and value of output, is accounted for by a largely increased activity on the part of the railway workshops and to a smaller extent in the building industry.

Motor Fuel.

At the annual meeting of the Distillers' Company it was announced that the company's new fuel, which is a combination of whisky and an extract from a vegetable grown in India and Ceylon, was now being supplied to users regularly, and further plants for its production would be erected. The new fuel will probably be 50 per cent. cheaper than the current price of petrol.

Railway Revenue.

Railway earnings for the week ended July 8 totalled £102,077, a decrease of £7,923 on the estimate. The total receipts for the present financial year from April 1 are £5,412,248, a shortfall of £392,861 on the estimates.

Metal Market Quotations.

London, July 17.—Standard copper, £63 2s. 6d. cash, £63 10s. forward; electrolytic copper, £70 10s. cash, £72 forward; standard tin, £153 12s. 6d. cash, £154 7s. 6d. forward; foreign lead, £24 17s. 6d. cash, £23 12s. 6d. forward; quicksilver, £11 10s., bar silver, 35½d., bar gold, 92s. 8d. per ounce.

PROFESSIONAL DIRECTORY.

D. M. KISCH & CO.,
CONSULTING ENGINEERS,
PATENT AND TRADE MARK AGENTS.

Established 1874.

C. H. M. KISCH, F.M. Chartd. Inst. of Patent Agents (Eng.
W. G. Ward, B.Sc. (Lond.); Assoc. M. Inst. C.E.; A.M.I.E. A.K.C.

16 to 19, 19a and 22 NATIONAL MUTUAL BUILDINGS
Corner of Rissik and Market Streets, Johannesburg.
P O Box 668. Telegrams "PATENTS." Tel. No. 774.

RAND STRATIGRAPHY

TAUGHT IN SIX DAYS IN THE FIELD
SOUTH AFRICAN GEOLOGY IN A MONTH

Apply by Letter:

P.O. Box 1112, Johannesburg

SCOTT ALEXANDER, Rand Stratigraphist

MINES DEPT. EXAMS.
CERTIFICATES AWARDED INSTITUTE.

MANAGERS' EXAMS., Sept., 1921, January—May, 1922.
We obtained 11 out of a total 16 certificates awarded in South Africa

	Metal
Ours	11
Rest of S A	5
Total for S.A.	16

OVERSEERS' CERTIFICATES.
During August, 1921—May, 1922, we secured **ALL** the Overseers' Certificates issued in South Africa, except 3 metal and 3 coal. During the first 6 months of 1922, we secured **ALL** the metal certificates

TUITION (Metal or Coa.) by class, correspondence or privately

Mining Institute (Prof. Yates),
St. James' Mansions, Eloff St. Johannesburg

GOVERNMENT EXAMINATIONS.
METAL. RESULTS, 1921. COAL.

Total METAL MANAGERS Certificates

Granted in S. A., 1921	36
Secured by Students of Messrs. LUCAS & WOLFE ..	21
Balance for S.A.	15

7 COAL MANAGERS Certificates obtained in 1921.

Total OVERSEERS Certificates (Metal and Coal)

Granted in S. A., 1921	61
Secured by Students of Messrs. LUCAS & WOLFE	25
Balance for S.A.	36

Total SURVEY Certificates

Granted in S. A., 1921	11
Secured by Students of Messrs. LUCAS & WOLFE	9
Balance for S.A.	2

C. D. LUCAS & B. E. WOLFE,
MINING ENGINEERS.

OFFICES & LECTURE ROOMS: PERMANENT BLDGS.
Postal Address, Box 6301. JOHANNESBURG

P.O. BOX 849 PHONE 1633

Littlejohn & Whitby

Assayers to the African Banking Corporation

CONSULTING ANALYTICAL CHEMISTS
:: : AND METALLURGISTS : ::

Office and Laboratories:

24, SIMMONDS STREET, JOHANNESBURG

Assays and analysis of all Minerals, Drugs, Foods, Water, Milk, Oils, etc., undertaken.

Experiments conducted. Reports made as to the treatment of any class of Ore.

J. E. MILLS DAVIES

CONSULTING MINING
—ENGINEER—
REPORTS AND ANALYSES OF OIL SHALES.

180 Stock Exchange Buildings
P.O. Box 4573 JOHANNESBURG Telephone 913

PATENTS, DESIGNS and TRADE MARKS

A. L. SPOOR

CULLINAN BUILDINGS
(1st Floor),
Corner Main and Simmonds Sts.,
—JOHANNESBURG—

Postal Address. Telephone:
Box 7312 5212

OWEN LETCHER,

Consulting Mining Engineer.

Member Institution Mining and Metallurgy (London).

Graduate Redruth School of Mines and Silver Medallist Miners' Association of Devon and Cornwall.

Technical Expert of the South African Mining & Engineering Journal since 1903.

176 STOCK EXCHANGE, JOHANNESBURG.
P.O. Box 963. ——— Telephone 913.

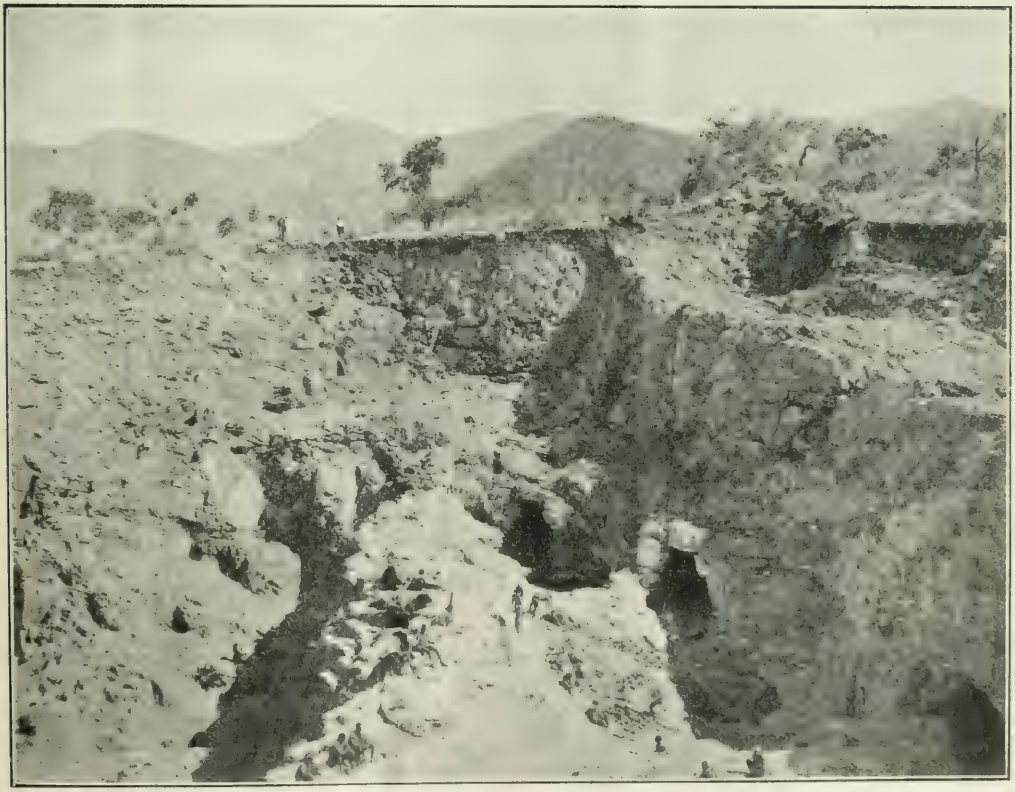
Properties Inspected and Reported on.

T.G.M.E. New Discovery—A Roodepoort Amalgamation—
A Natal Coal Fusion—Lower Costs and the Life of the Rand.

The South African
Mining & Engineering Journal
THE ONLY MINING AND ENGINEERING WEEKLY PUBLISHED IN AFRICA.
Established 1891.

Vol. XXXIII., Part I. JOHANNESBURG, TRANSVAAL, SATURDAY, JULY 29, 1922. No. 1609.

A Great Rhodesian Asbestos Mine.



The North-East Lode Quarry, Nil Desperandum Mine, of the African Asbestos Mining Co., Ltd., at Shabani, Southern Rhodesia.

SIEMENS BROTHERS
& CO., LIMITED

CABLES AND ACCESSORIES

TELEGRAPH
MANUAL TELEPHONES
AUTOMATIC TELEPHONES
SIGNALLING APPARATUS

OVERHEAD LINE
EQUIPMENT

PRIMARY CELLS
&c., &c.

Representatives in South Africa:

A. J. G. SIMPSON, A.M.I.E.E.
African Life Buildings, 85, St. George's St.,
CAPE TOWN.
P.O. Box 239, Cape Town. Telephone 1202 Central.

G. H. B. BERNARD, A.M.I.E.E.
9-10, Cotts Buildings, Rissik and Fox Sts.,
JOHANNESBURG.
P. O. Box 7404, Johannesburg. Telephone 408 Central.

Telegrams: "SIEMENS."

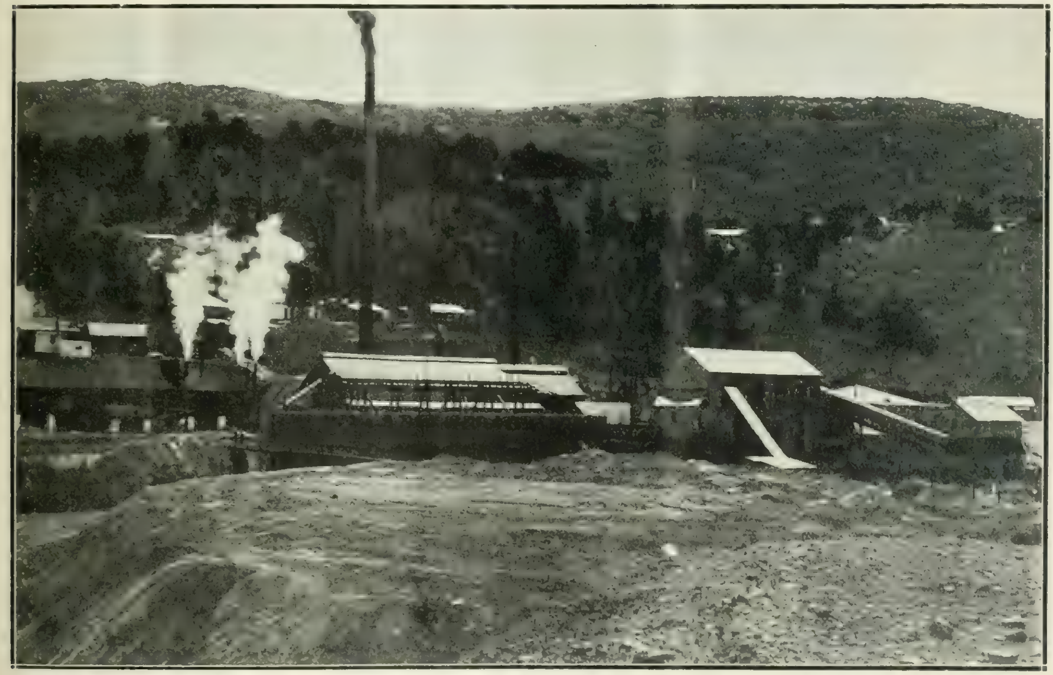
Progress of the Natal Coal Mining Industry.

NATAL NAVIGATION AND VRYHEID COAL COMPANIES TO AMALGAMATE.

IMPROVEMENT IN RAILWAY ROLLING STOCK—STEADY INCREASE IN OUTPUT—TRADE FACTORS AND FLUCTUATIONS.

It is a sign of the times that the Vryheid (Natal) Railway Coal and Iron Company has decided to pass its dividend, and to enter into an alliance with the Natal Navigation Company. The position was explained by the chairman, Major G. H. Peake, at the recent annual meeting, in the following terms:—

Hitherto the most remunerative part of our business had been the sale of coal for bunkers and shipment, the demand for which suddenly fell off, the principal reason being that, owing to the fall in freights and in the price of Welsh coal, purchasers in the East ceased buying Natal coal to a large extent, giving the preference to Welsh. Previously we were members of an association of Natal coalowners which had an arrangement for taking coal from one another when it was required. Outside this association was a group of collieries which refused to come in unless we were left out. It was not a nice stipulation to make, but there it was. The result was, however, that we lost our old connection. Faced with this difficulty, the question arose as to what should be done. The dilemma was a serious one and led very quickly to irregular working with reduced outputs and lower prices.



The Vryheid (Natal) Colliery.

Advantages of the Fusion.

Last November I was approached as to whether I would sell my interest, which is a large one, in this company. It was pointed out to me what great advantages would accrue if our company and that of the Natal Navigation Collieries and Estate Company, Ltd., could be worked under one control. The saving in administration expenses alone would amount to a large sum. On our part I am advised that we have probably the most valuable coalfield in Natal, having regard to its extent and the quality of the coal. The working costs are satisfactory, owing to the fact that the coal outcrops, and shafts are not required. The output is capable of great expansion with a comparatively small capital expenditure. On the other hand, the Natal Navigation Company has an excellent name and a splendid connection in the market for the sale of coal, and has such a demand that it cannot be met from their own collieries.

It therefore appeared to your Board that the value of both companies would be greatly increased were a fusion to take place on fair terms, and hence the agreement, of which the shareholders have had a copy. Our Board is of opinion that the Hlobane Colliery has a great future, and that success will be more rapidly attained under the agreement than if we "carry on" as at present and enter into competition in selling so as to acquire the position to which the quality of our coal entitles us. All those shareholders to whom I have been able to explain the position are supporting the agreement, and as a result of this meeting I hope all will come in, as I feel sure they will be thereby acting in their best interests.

The annual report of the Durban Chamber of Commerce states that the output of Natal collieries for the year 1921 totalled 3,141,129 tons, as compared with 2,965,699 tons in 1920. An improvement in the railway rolling stock placed at the disposal of the collieries was felt, as a result of the more complete opening up of the Booth Junction—Cato Ridge line. The new line is carrying at present 12,000 [illegible] the congestion on the lower part of the Natal main line. The shipment trade of the Province during the year was a record, due principally to the tonnage exported as cargo, which totalled 886,759 tons. There was a falling off in the bunker trade as compared with previous years. The following are statistics regarding coal shipped at Durban during some of the past years:—

Year.	Tons Exported Bunkered	 as Cargo	Total.
1921	944,168	886,759	1,830,927
1920 ...	1,001,534	583,209	1,584,743
1918	592,283	583,167	1,175,450
1916	1,356,412	168,949	1,525,361
1914	1,048,083	375,663	1,423,746
1912 ...	1,080,006	558,652	1,638,658
1910	1,246,115	323,344	1,569,459

Northern Natal Navigation Collieries at Dumbe, near Paulpietersburg. Makatees Kop in the distance.

Below are given the total Natal outputs for the last ten years:—

	Tons.		Tons.
1921	944,168	886,759	1,830,927
1920	2,965,699	1915	2,071,371
1919	2,495,014	1914	2,317,241
1918	2,329,470	1913	2,608,408
1917	2,578,918	1912	2,472,111

Economic disturbances in other parts of the world are quickly reflected in the coal trade of Durban. The effect of the British coal strike, which lasted from April to July of 1921, was to reduce the volume of bunker trade, and to increase export. The suspension of the supply of Welsh coal to oversea markets caused a demand there for South African coals. Large tonnages were exported from Natal to Indian ports and to Egypt, and in one or two instances cargoes were sent to South America; but with the settlement of the home dispute came a determined effort on the part of the Welsh collieries to recapture the markets which had been temporarily lost, and with their advantage in quality of coal and freight facilities, they have succeeded in ousting competitors almost entirely.

Coal for use at Capetown is still being carried by the overland route, a distance of 1,100 miles. The railage per ton from Hatting Spruit to Capetown (for bunker and cargo coal) has been reduced from ·279d. to ·242d. The railage per ton per mile is now ·218d. The rate for bunker coal from Hatting Spruit to Durban is 28d. per ton per mile. In addition to the reduction in railage, the Government charge for loading at Capetown has been reduced from 3s. to 1s. 6d. per ton, which is 6d. below the pre-war level, while the charges at Durban remain, both for export and bunker coal, 50 per cent. higher than the pre-war level. The new Capetown railage rate is only 46 per cent. above pre-war, while the Durban rate remains at 166 per cent. above pre-war. It is believed that, by extending the present export rate to apply to coal for Cape ports, Natal coal could be profitably carried by the sea route, and thus obviate the wasteful, long overland haul.

A reduction was made in the price of bunker coal at Durban from January 1, 1922. The present price of grade A coal at this port is 32s. 9d. per ton of 2,240 lb., as compared with the 1921 price of 42s. 9d. A substantial reduction has also taken place in inland prices. The reduction in prices has necessitated a revision of the standard rate of wages on the Natal coalfield, fixed from February 1, 1921. The Conciliation Board met in January, 1922, and agreed to reduce the standard rate from 28s. to 24s. 6d. for the two months ending March 31; thereafter, unless otherwise arranged, the Natal rate is to be 2s. below the standard rate of the coal section of the Transvaal Chamber of Mines.

A Mountain of Coal. A View of the Enyati and Buffalo Collieries, Vryheid district.

Messina Copper.

ENCOURAGING DEVELOPMENTS.

Re-opening the Mine.

A very full and clear exposition of the affairs of the Messina Company were given by the Chairman, Colonel J. J. Grenfell, at the annual meeting the other day.

The Year's Development Work.

Inter alia, he said:—In regard to the mines, you will recollect that when I met you last year you were informed that owing to the unfavourable circumstances ruling in regard to the high cost of labour and high cost of transportation—both of which added to the high cost of stores and the low price of copper—it had been decided to close down production, and while doing a small amount of development, to push on with the reconstruction and improvement of the mill, power plant, smelting and refining works. This policy was continued during last year, and a further 55,783 tons, assaying 3.39 copper, were added to the reserves, making a total of 565,977 tons, assaying 3.25 copper. We have in addition on the dump about 400,000 tons, assaying 6 per cent. copper, which will be retreated in our improved mill and flotation plant, and you may say that we have now sufficient ore in sight to keep the works busy for some years. That is a position sufficiently favourable to justify us, when we resume production, in carrying on only a restricted development expenditure.

The Approach to the Messina Copper Mine.

A Thoroughly Up-to-date Plant.

While the underground work was proceeding on a restricted scale, operations on the works on the surface were pushed on and practically completed. The mill has been overhauled, and with certain improvements added to suit the treatment of our ore, is now a thoroughly up-to-date plant, and from it the general manager anticipates a much higher percentage of recovery than was possible in the past with the old plant. In fact, he estimates an increase in recovery from 70 per cent. in the old mill to 85 per cent. in the improved plant. What we have done with the mill, we have equally done with the smelting and refining plants, and there remained at the end of the year not much more to be done to enable us to produce best select copper.

"Go Slow" Policy Justified.

The cost of all classes of white labour remained very high during the year, and as intimated to you in the previous year's report, it would have been suicidal for us to have attempted any production, knowing full well that we should only incur large losses. That we were not the only copper producers in this state is shown from the following extract from a New York cable dated 3rd May:—

> The annual earnings of the Utah Copper Company show a deficit of $2,058,000, compared with a surplus of $4,924,000 in 1920. The Anaconda Copper Company shows a deficit of $17,000,000, compared with a surplus of $2,692,000 in 1920,

and I think therefore you will agree that our policy of "go slow" has been fully justified, and has avoided that fall into a bottomless pit which has been achieved by so many industrial concerns during the last two years.

The Outlook.

I would now turn away for a moment from the gloomy past and take a survey of the possible future. As I have already stated, this report is very much overdue, and we are already close on the time when a further year's operations will be under report, and in the interval a considerable amount of water has flowed under the bridge. In a circular, which we have sent out with this year's report, you are informed that we have been able to make an advantageous agreement with the Government, which justifies us in resuming operations under conditions which should be profitable.

Government Aid.

When Messina mines are operating there is some £200,000 per annum being spent locally, and there is, in addition, a substantial market for various produce, so that I have no doubt that the Government have been wise in concluding an agreement with us, whereby, by the grant of a bonus per ton on copper produced and a relaxation of certain regulations which have weighed heavily on our mining costs, they have secured the re-opening of the industry, and the consequent re-establishment to a large extent of the prosperity of the Northern Transvaal.

The price of copper, which is dependent on so many conditions over which we have no control, bears such a preponderating influence on our prosperity, or otherwise, that I am not in a position to prophesy as to future results, but at any rate we may claim that by the agreement referred to above we have succeeded in very largely reducing the cost of production, and that is the first step on the road to earning profits.

The Arton Copper Interest.

With other South African houses, we are interested in the Arton Copper Company, which is a company opening up the old copper workings which have long been known to exist on the farm to the east of Messina, and through which the extension of the Messina lodes can easily be traced. A considerable amount of development has been done, and in a shaft sunk just on the border within a few yards of the eastern limit of the Messina mine a lode of rich copper glance ore has been opened up, which has promising prospects. Further development on the 300 ft. level is necessary, and this is now being carried on to determine what is the extent of the payable ground.

There have been other discoveries of copper lodes in the neighbourhood, which goes to show that our policy in providing smelting and refining works for the treatment of local ores may in the end, apart from the treatment of our own ores, have been a step in the right direction.

CLIMAX DRILLS

A Speed Contest and the Joburg III.

IN one of the many Mines where Climax Drills are in use the Joburg III was doing good work.

But somebody came along with another drill, and claimed for it that it would work 50%, faster than any drill in the mine.

So it was set to work alongside the Joburg III . . . .
and this is what happened :—
Somebody's Drill did 6 holes in 5 hours.
The Joburg III did 7 holes in 4½ hours.
The conditions were identical—but Joburg III was a *better* drill.

It's all in the build of the drill. *Climax Sam.*

Save your Bills—
Climax Drills
British —— from
Handle to Steel Point

Joburg III is a Cradle Hammer Drill for wet or dry drilling, with automatic rotation and screw feed. Fitted with the famous little spool type valve.

THE CLIMAX ROCK DRILL & ENGINEERING WORKS LTD
4 Broad Street Place London E.C.2. Works:- CarnBrea. Cornwall.

(INCORPORATED IN GREAT BRITAIN)

Local Address : **49, STELLA BUILDINGS,**
Corner Rissik and New Streets, —— JOHANNESBURG.
P.O. BOX 4256. —— Telegrams : "THUMBSCREW." —— Telephone 2794.

Working Costs and the Life of the Rand.

HOW THE STATE AND THE INDUSTRY MAY BENEFIT—LONGER LIFE, INCREASED EMPLOYMENT, AND GREATER ATTRACTION FOR CAPITAL.

The following statement, which is to be the last and most important put forward by the Transvaal Chamber of Mines on behalf of the gold mining industry, was presented to the Mining Industry Board by Sir Evelyn Wallers, Mr. H. R. Hill (Consulting Engineer, Union Corporation), Mr. P. M. Newhall (Consulting Engineer, Central Mining Group), and Mr. W. Gemmill (Actuary and Labour Adviser, Chamber of Mines). It seeks to convey the extent to which the workable ore contents of the Rand will be enlarged and improved by such economic measures as a diminution of working costs. The statement claims that improved economic measures must confer the following benefits on the State:—(1) Longer life to the industry, (2) wider field for employment, (3) greater return to investors, (4) attraction of new capital.

The statement is as follows: The gold mining industry has been greatly concerned by the fact that during the past few years—*i.e.*, since 1914 and the outbreak of the Great War—working costs on the mines have been constantly rising, to such an extent as to more and more seriously curtail the scope of economic operations.

A Central Rand Panorama, showing low-grade mines affected by reduction in working costs.

This curtailment has been brought about by the necessity of from time to time excluding from the range of treatment considerable tonnages of low-grade ore, that is, ore which carries gold in recoverable quantities, but insufficient to cover the cost of recovery of that gold.

It is the object of mining companies to work the maximum tonnage possible, and to recover from that tonnage the maximum amount of gold—always, of course, in the expectation that each ton treated will yield some profit. It should not be necessary to state this elementary principle of mining, yet it seems to be but slightly realised by the community in general. It therefore seems desirable to point out that, without altruism on the part of companies, the working of the maximum remunerative tonnage results in the maximum benefit to the community by way of—

(1) Maximum employment for both white and native labour.

(2) Maximum consumption of stores and material.

(3) Maximum revenue, direct and indirect, to the State.

It is obvious that the bringing within the sphere of economic mining operations of huge tonnages carrying recoverable gold values somewhat [illegible] than the [illegible] costs of the last few years would increase the scope for useful employment of additional numbers of white men, both by widening the present scale of operations on some mines, and by prolonging the period of operations of others where conditions do not justify broadening the existing scale.

More White Employment.

More extensive economic employment of white men on the mines of the Witwatersrand can best be attained by a decrease in the cost of production, which will arise out of—

(1) An unrestricted right to recruit native labour up to full requirements of the industry.

(2) Increased efficiency on the part of all employees, both white and coloured, together with the various other factors which have been brought forward in evidence.

The above reforms would have a far-reaching effect on the mining industry and the country, by rendering useful great tonnages of low-grade ore now lying idle.

The subject of the ore contents of the Witwatersrand was carefully investigated, and a statement thereon presented to the Economic Commission in 1914. The matter has again had careful consideration, and the Chamber presents this statement with the object of bringing to the attention of the Commission the relatively great importance of the lower-grade tonnage of the reefs of these fields.

Four Classes of Mines.

In order to examine the subject in detail, the various mines affected have been divided into four classes, enumerated and described below:

Class I.—This consists of the present producing mines which contain large quantities of ore which, under the conditions prevailing in 1921, could not be worked at a profit. Given the conditions outlined above, much of this ore can be dealt with successfully, and in the majority of cases in this class its exploitation would widen the scope for employment, apart from prolonging the period of production.

Class II.—This embraces a number of relatively important mines which at one period or another have been producing—some on a very large scale. These have, through a variety of causes, been compelled to cease operations long before their claim areas had been exhausted. Under improved and more stable conditions there would be a possibility that sufficient inducement could then be offered to obtain the necessary capital to re-open these mines. The effect on the community and general economic position would be obvious.

Class III.—This includes those mines which have sunk shafts to the reef and carried out a considerable amount of development and which have exhausted their cash results. The results obtained combined with conditions prevailing, however, have not been sufficiently attractive to promote raising further funds to carry out the original objects of these companies. An improvement in conditions would no doubt create further interest in these derelict concerns, so that some may re-open, continue development and become future producers and employers.

Important Gold Areas.

Class IV.—This includes very important areas of practically unexplored ground situated mostly on the extreme western and eastern ends of the Witwatersrand, a very large proportion belonging to the Government. The capital required for the development of these areas would be large. The total gold contents of these areas are estimated to be enormous, and the importance of their exploitation to the country cannot be sufficiently emphasised.

With the object of showing the locality and extent of the various mines and properties enumerated under the above four classes, a map of the Witwatersrand has been prepared, which in diagrammatic form draws attention to them. The position of various other gold-bearing reefs in the Witwatersrand area, on which relatively little exploratory work has been done, particularly in recent years, is also indicated on the map.

The limit of successful mining in depth has been taken at 7,500 feet vertically below the surface for the Western, Central and Near East Rand, and at 5,000 feet vertically for the Far Eastern Rand.

Class I. of the mines under investigation includes the following thirty-five mines:—Aurora West, Brakpan Mines, City Deep, Consolidated Langlaagte, Consolidated Main Reef, Crown Mines, Durban Roodepoort Deep, East Rand Proprietary Mines, Ferreira Deep, Geduld Proprietary, Government Gold Mining Areas, Geldenhuis Deep, Knight Central, Langlaagte Estate, Meyer and Charlton, Modderfontein B., Modder Deep Levels, Modderfontein East, New Goch, New Kleinfontein, New Modderfontein, Nourse Mines, Randfontein Central, Robinson Deep, Roodepoort United Main Reef, Rose Deep, Simmer and Jack, Springs Mines, Van Ryn Estates, Van Ryn Deep, Village Deep, West Rand Consolidated, Witwatersrand G.M., Wit. Deep, Wolhuter G.M.

Excluded.—Luipaards Vlei, Robinson, Primrose, New Unified.

Estimated Ore Tonnages.

The position of all these mines has been examined in great detail, with a view to ascertaining the estimated tonnages of ore of various values remaining in these mines down to a depth of 7.500 feet (where that line happens to be on these mines).

The results are as follow:—

Dwts. Per Ton.	Approx. Value. s.	d.	Millions of Tons. Total.	Increase.
6·0	25	6	316	—
5·5	23	0	363	47
5·0	21	0	421	58
4·5	19	0	472	51
4·0	17	0	544	72
3·5	15	0	616	72
3·0	13	0	695	79
			Total increase	379

Included in the above figures are appreciable tonnages of low grade ore already developed, and which would become an immediate asset under more economic conditions. These tonnages are:—

Valued at 4·5 dwt. (19s. per ton), 4·23 millions.

Valued at 4·0 to 4·5 dwt. inclusive (17s. per ton), 13·66 millions.

Valued at 3·5 to 4·5 dwt. inclusive (15s. per ton), 27·75 millions.

The average working costs for the producing mines of the Witwatersrand or the year 1921 was 25s. 8d. per ton milled. In a rough way the tonnage shown at 6 dwt. and over in value, which corresponds closely with 1921 working costs, has a life of barely fourteen years, based on last year's production of 23,400,000 tons. Any reduction in working costs below 25s. 6d. automatically increases the life of the mines by from two to three years for every 2s. reduction. In other words, if working costs can be reduced to 15s. per ton milled, it is clear that, on broad lines, the life of the mines under Class I. will be prolonged to 26 years, or nearly doubled.

Effect of Smaller Costs.

From the mere prolongation of the life of the "fields" it would not follow that the scope for employment necessarily broadens. But more immediate effects would result from a substantial decrease in working costs, the most telling of these being:

(1) That there would be an opportunity for operating the spare plant at present erected on these mines, estimated to have a productive capacity of 6,600,000 tons per annum. The field for employment would naturally show relative expansion.

(2) Mines dealing with very large areas, but at present operating with comparatively small reduction plants, would have an inducement to increase their scale of production, with a proportionate increase in the scope for employment.

(3) Mines with small plants and limited lives would be able to continue operations for a longer period, and, although not necessarily requiring a greater number of men, would nevertheless be a factor in the market for labour.

Low Cost Mines.

It may seem that average working costs of 15s. per ton milled are unattainable under modern conditions. In order to illustrate that this may not necessarily be the case, the following list of various companies with low working costs is given for the year 1914, when the average cost for the whole Rand was 17s. 1d. per ton milled:—

	1914. s.	d.
Crown Mines	15	7
Glencairn	11	9
Consolidated Langlaagte	14	9
Knights Deep	12	1
May Consolidated	11	5
Modder B.	15	7
New Goch	11	5
New Modderfontein	15	5
New Primrose	12	9
Robinson	14	3
Simmer and Jack	12	7
Van Ryn Estate	15	2
Witwatersrand G.M. Co.	13	4

Conditions on some of these mines were, no doubt, exceptionally favourable to low costs. On the other hand, in recent years many improvements in technique have been introduced, all tending towards lower expenditure and greater efficiency.

Prematurely Shut Down.

Class II.—The mines included in this category are as follow:—

Bantjes Consolidated, closed February, 1919.
Cinderella Consolidated, closed December, 1913.
French Rand, closed November, 1909.
Jupiter, closed May, 1920.
Knights Deep, closed September, 1920.
Lancaster West, closed January, 1913.
Princess Estate, closed May, 1920.
Simmer Deep, closed May, 1920.
Vogelstruis Estate, closed February, 1917.
Vogel Deep, closed July, 1910.

It is scarcely necessary to examine here the causes which resulted in the closure of these mines, it will be sufficient to point out that in the majority of cases only a comparatively small proportion of their total claim holdings have been developed or worked out.

It is estimated that the undeveloped areas of this list of mines total approximately 4,600 claims, with a total content of 140,000,000 tons. It is a reasonable assumption to hold that from 40 per cent. to 50 per cent. of such tonnage is worth 3.5 dwts. (15s. per ton) and over, *i.e.*, 56,000,000 to 70,000,000 tons.

More Closed Mines.

Class III. Mines are as follow: Apex portion of New Kleinfontein, closed July, 1918; Daggafontein, closed April, 1921; East Rand Extension, closed March, 1911, New Boksburg Gold Mines, closed 1911; Rand Collieries, closed August, 1913; Van Dyk, closed October, 1910.

The amount of development work done in these areas of 5,874 claims was comparatively small, nevertheless four of the six companies had developed reserves totalling 1,000,000 tons, averaging 5·6 dwt. in value. On a basis of 25,000 tons a claim, the gross contents of these mines is estimated at 147,000,000 tons, of which 40 per cent. could reasonably be regarded as payable under favourable conditions, the amount being, say, 60,000,000 tons.

Big Potential Areas.

Class IV. This consists of two very large areas on the Far East and Far South West Rand.

As regards the Far East, this examination has proceeded on the lines laid down by the Government Mining Engineer in his "Memorandum on the Far East Rand," dated 1916. There still remain in this basin some 66,400 reef-bearing claims, of which 50,000 are estimated to contain reef at a depth of less than 5,000 feet, and 16,500 at a slightly greater depth.

About four-fifths of the mining rights are vested in the State. It is very difficult to forecast the amount of workable ore which this area is capable of producing. Exploratory work has been carried out by means of boreholes, but it is generally recognised that this method does little beyond proving the depth at which the reef is situated below the surface. This portion of the Witwatersrand contains only one reef presenting attractive features, lying at a very slight inclination from the horizontal, and the tonnage per claim is therefore less than elsewhere on the fields.

In submitting a tonnage estimate, Sir Robert Kotzé's basis has been adhered to. His assumptions are that an average claim produces 9,000 tons, this being based on 40 per cent. of its total contents being profitable.

Further, selecting only half of the 50,000 claims as being of value, the tonnage content is therefore calculated at 25,000,000 tons capable of producing gold valued at £300,000,000.

Of the South-Western Rand, little is known, beyond results from scanty borehole exploration. The data available in regard to this locality do not warrant any attempt to frame an estimate of its tonnage possibilities.

There are other potentialities, such as Kimberley Reef series low grade as a rule, together with deposits at Potchefstroom and Klerksdorp. Such data as are available concerning these reefs indicate that as a whole they are too low grade to attract capital for large scale working under such economic conditions as have hitherto prevailed here.

Doubling Available Tonnage.

A summation of the additional tonnage estimated under the various classes is, therefore, as follows:

	Millions of Tons.
Class I.	379
Class II.	60
Class III.	60
Class IV.	225
Total	724

It has already been stated that the present resources of producing mines are calculated at 316 millions of tons over 6 dwt. in value, and the importance of bringing into operation double this quantity would be of lasting benefit to the country. A reasonable assurance of a period of continuous efficiency bringing about a reduction in working costs would not only benefit the existing shareholders of producing mines, making their present holdings more remunerative, but they would no doubt feel some inducement to venture further capital, not only to expand existing enterprises, but to support new undertakings.

The American Trade Commissioner has received an inquiry from a firm of manufacturers of high-grade engine lathes. Any of our readers or advertisers who are interested in securing further information can do so by communicating with Mr P. J. Stevenson, at his office, 12 Standard Bank Chambers.

GLYNN'S LYDENBURG: DIVIDEND PASSED.

In consequence of heavy expenditure on shaft sinking and purchase of enemy shares there will be no dividend declared per 31st July 1922.

Standard Bank's Report.

The report of the Standard Bank of South Africa for the year ended March 31 shows that the balance of profits, including £206,724 brought forward, is £709,037, from which have been appropriated £50,000 for bank premises account and £100,000 for the officers' pension fund. The sum of £367,811 was paid out in dividends, and £191,226 has been carried forward. Deposit, current and other accounts total £52,018,941, cash in hand, £13,010,949; and bills discounted and advances, £36,442,485.

'LOWMOOR'
IRON and RIVETS
THE PRODUCTS OF
ROBERT HEATH & LOW MOOR, LTD.
SPECIALITIES:
COLD BLAST PIG IRON,
PUMPS,
WINDING ENGINES,
PIT TUBS,
COLLIERY PLANT & BUILDINGS,
CHILLED & GRAIN ROLLS.
Sole Agents in South Africa for Products of
LOW MOOR WORKS:
SAMUEL OSBORN
(S.A.), Ltd.,
Box 3162. Phone 4673.
JOHANNESBURG.

HADFIELDS, LTD.

WORKMEN EMPLOYED DURING THE WAR OVER 15,000.

East Hecla and Hecla Works, Sheffield, England.

WORKS AREA: OVER 200 ACRES.

ROWBOTHAMS

Self-Oiling Wheels and Axles

FOR MINE WAGONS.

ROWBOTHAM'S Wheels have withstood the most severe tests, and have been adopted exclusively in many of the largest collieries in England.

ALL the Wheels are fitted with a special frictionless bronze bush which prevents wear on axles and reduces friction to a minimum.

ALL THE WHEELS ARE MADE OF HADFIELD'S TOUGHENED CAST STEEL.

AFTER being charged with oil they usually require no further attention for a month.

SO perfect is the lubrication, that the ease with which tubs fitted with Rowbotham's Wheels can be hauled is astonishing.

THE cost of oiling is, approximately, one penny per month.

STEEL CASTINGS AND FORGINGS OF EVERY DESCRIPTION.

Complete Stone Breaking and Ore Crushing Plants.

ERA

Trade Mark

SOLE MAKERS OF HADFIELD'S PATENT

MANGANESE STEEL

THE SUPREME MATERIAL FOR THE WEARING PARTS OF CRUSHING, MACHINERY, ETC.

Head Office for South Africa: 46 and 47 CULLINAN BUILDINGS, JOHANNESBURG.
PHONE 5900 TEL. ADDRESS: "HECLA" BOX 1009
STORES: DENVER, TRANSVAAL (Adjoining Denver Station)

Bulawayo Agents:
WHITMORE & JACKSON,
17 & 18, Agency Chambers.

Salisbury Agents:
P. PEECH & CO.,
Angwa Street.

Natal Agents:
THOS. BARLOW & SONS
(S.A.), LIMITED,
Smith Street, Durban.

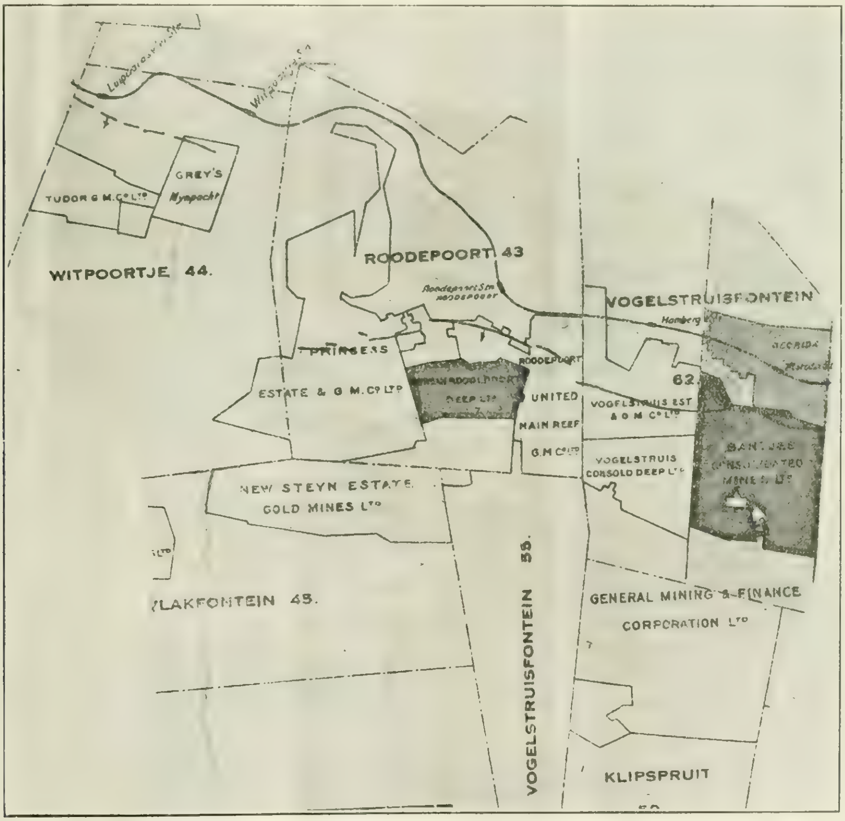
A Projected Roodepoort Amalgamation.

DURBAN DEEP THE CENTRE—MANY DORMANT PROPERTIES—SCHEME UNDER DISCUSSION.

About a year ago we dealt with the prospects of a big amalgamation scheme to embrace the various properties of the Roodepoort area. A proposal is now understood to be under consideration with that object in view.

The mines in the Roodepoort district are again in the public eye. The Roodepoort United is to close down this month, the Bantjes is up for sale, and the Princess Estate and old Durban Roodepoort are but memories. Only the Durban Roodepoort Deep is still flourishing, and by all accounts is doing well with lower costs and improved development. It is said that a scheme to embrace the areas lying dormant in this district is being revived, and some definite particulars may soon be available. A year ago when writing of a rumoured merger in this district we said:

"We have in our minds the various properties and blocks of disjointed claims lying in the vicinity of Roodepoort. The mines of this section of the goldfields have never achieved much in the way of dividends. With the exception of the Durban Roodepoort, their records have been peculiarly poor. But we do not consider that these propositions ever have been given a fair and legitimate chance. They have always worked as small units with a very modest basis of crushing and treatment, and with costs which, whilst high in the pre-war epoch, have become utterly excessive during the past year or two. But, generally speaking, the values recovered and the grade of ore exploited have not been bad. Moreover, it is a most important fact that in the deepest workings in this area, that is to say, in the Durban Roodepoort Deep mine, the values and the percentage of payability are abnormally high. Such encouraging development features in any other area of the goldfield would be hailed with satisfaction, but in the despised and unfashionable Roodepoort area they are overlooked. It is true that the width of reef is not great, and it is also true that the full merits of this proposition can only be realised if it is regarded as a hammer boy mine and not as a machine stoping proposition; but, all the same, we believe that a broad and businesslike amalgamation of interests of these Roodepoort mines, based on the Durban Deep, would bear fruit which would surprise the average student of Rand industrial politics, who has got it into his head that no good thing can come out of Roodepoort. The time for such a fusion is not at present propitious. But if, and when, working expenses decline and the cost of plant falls, the near West Rand may yet prove a profitable field."


GREY'S
Nymph
TUDOR G M. C° L^{TD}
WITPOORTJE 44.
ROODEPOORT 43
Roodepoort Stn
PRINCESS
ESTATE & G M. C° LTD
DURBAN ROODEPOORT DEEP LTD
ROODEPOORT
UNITED
MAIN REEF
G.M C° LTD
VOGELSTRUISFONTEIN
Homberg
62.
VOGELSTRUIS EST & G M C° LTD
VOGELSTRUIS CONSOLD DEEP LTD
BANTJES CONSOLIDATED MINES LTD
NEW STEYN ESTATE GOLD MINES LTD
VLAKFONTEIN 45.
VOGELSTRUISFONTEIN 55.
GENERAL MINING & FINANCE CORPORATION LTD
KLIPSPRUIT

The Roodepoort Area: Where a big amalgamation scheme is said to be projected.

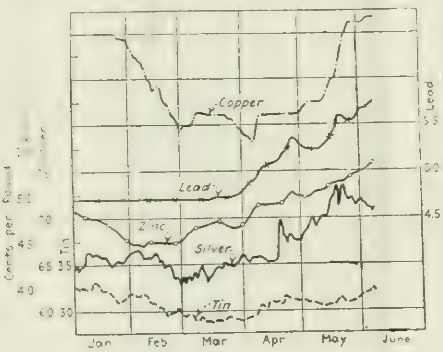
The Advance in Metal Prices.

COPPER, LEAD, ZINC AND TIN.

Those engaged in metal mining [illegible] and investors in [illegible] metal mining companies may well feel encouraged over the price tendencies of the more important non-ferrous metals in the last three months, as illustrated in the accompanying chart, says a writer in the *Engineering and Mining Journal* of New York.

The long buying movement in copper which took place in the fall and early winter of 1921 left the refinery price at 13.5c. at the beginning of this year.

Despite the large sales of March, reported at 184,000,000 lb., the price did not materially advance, and the announcement of a resumption of production by the porphyries had a most depressing effect, causing the price to fall to what will in all probability be the low of the year—12.25 @ 12.375c., refinery. Then it began to be realised that the resumption was justified by the fact that most of the companies were practically sold out of stocks of copper available for domestic deliveries, and that average demand would necessitate an increased supply. Some fear was felt that the large producers, which depend for efficient operation on large tonnages, would attempt to run to capacity, make copper as cheaply as possible and force some of the higher cost producers to close down. So far no tendency to do this has been noted; the porphyries have announced a resumption at only 50 per cent. of capacity, which will hardly prove a burden on the market unless the summer demand is much below expectations.



Variations in Metal Prices since January 1st.

Lead.

Lead has shown more strength than the closest followers of the industry had expected. All during the winter the price held constant, with production and consumption practically balanced, with Mexican production going abroad, and with the comparatively small stocks of lead, produced at a high cost, in strong hands. In the middle of March, however, the demand began to pick up, and soon was a little greater than those selling at fixed prices were able to supply. By the end of summer, consumption is likely to fall away somewhat, for some of it is seasonal. Then, too, the increase in the price of zinc will stimulate lead-zinc producers; and the increase in foreign silver will stimulate foreign silver-lead producers. So, with the price now 35 per cent. above the 1912-1914 average, markedly higher prices are hardly to be expected, though the next two or three months may record a continued advance.

Zinc.

Zinc has had the smoothest rise of all of the metals, and the most long continued, beginning in a small way early in February, when what will doubtless be the low for the year was reached. Both the galvanising and brass trade has improved materially since early spring, taking increased amounts of zinc.

Mining Men and Matters.

Mr. Arthur Stenhouse (a director of Ainsworth, Ltd.), formerly mine secretary of the first gold mining company (Kromdraai, 1887) registered in the Transvaal, left here for a month's sojourn in Zanzibar, on Monday last.

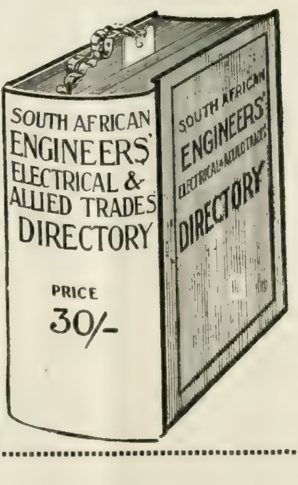
* * *

The Hon. Alistair Fraser, who has been managing the Planet Arcturus Mines, is not returning to Rhodesia, says the *Bulawayo Chronicle*, having, owing to the unsatisfactory outlook at those mines, which is likely to necessitate their closing down at no very distant date, accepted the chairmanship of the board of the Champion Mines of India, and it is highly probable that he will be appointed a member of directorates of other Indian mines. Capt. L. Ludlow, of the Gold Fields Rhodesian Development Company, is also not returning to the appointment he held here, as he will shortly be proceeding to Rumania on business for the New Consolidated Gold Fields of South Africa. Both Capt. Ludlow and Mr. Fraser will be greatly missed, for they have been associated with Rhodesia since its early days and have done much to further its progress.

TRANSVAAL G.M. ESTATE.

The following are the particulars of the output for the month of June, 1922, in respect of the above company: Central Mines: Tons crushed, 11,900; yielding 3,500 fine ounces. Elandsdrift Mine: Tons crushed, 1,690; yielding 929 fine ounces. Vaalhoek Mine: Tons crushed, 1,900; yielding 878 fine ounces. Estimated value of month's output, £24,089. Estimated profit for month, £165.

Note.—The gold output for the month is valued at £4 10s. 6d. per fine ounce net, after allowing for exchange and realisation charges.


SOUTH AFRICAN ENGINEERS' ELECTRICAL & ALLIED TRADES DIRECTORY
PRICE 30/-
SOUTH AFRICAN ENGINEERS' ELECTRICAL & ALLIED TRADES DIRECTORY

INCLUDING A
COMPLETE MINING
DIRECTORY
OF SOUTH AFRICA.

PUBLIC SUPPLY
UNDERTAKINGS
RAILWAYS
TRAMWAYS
SUGAR MILLS
&c. &c.

Published by
S.A. Mining & Engineering Journal
Stock Exchange Building
Johannesburg

Barnato Mines Development.

RESULTS TO DATE.

The following appears in the quarterly reports of the Barnato companies:—The declared profits have been arrived at by adding together the published monthly figures. The value of the gold per fine ounce was taken as follows: April, £4 12s.; May, £4 12s.; and June, £4 12s. 6d.

Consolidated Langlaagte Mines.

Total profit for the quarter, £12,025. The expenditure on capital account amounted to £879, and debenture interest to £344. The development footage sampled totalled 1,473 feet, and gave the following results: Payable, 703 feet, having an average value of 27.1 dwts. over 15.6 inches of reef; unpayable, 770 feet, having an average value of 6.8 dwts. over 14.2 inches.

Government Gold Mining Areas.

Total profit for the quarter, £433,547. The expenditure on capital account amounted to £12,219. The development footage sampled totalled 2,610 feet, and gave the following results: Payable, 2,240 feet, having an average value of 12.3 dwts. over 65 inches of reef; unpayable, 370 feet, having an average value of 2.8 dwts. over 37 inches.

Langlaagte Estate.

Total profit for the quarter, £38,900. The expenditure on capital account amounted to £9,212. The development footage sampled totalled 2,530 feet, and gave the following results: Payable, 1,500 feet, having an average value of 24 dwts. over 24 inches of reef; unpayable, 1,030 feet, having an average value of 8.2 dwts. over 16 inches.

During the quarter a start was made with the sinking of the new shaft on the ground purchased from the Langlaagte Proprietary Mines, Ltd., and this shaft was sunk to an incline depth of 49 feet. The acquisition of this ground was referred to at the last annual meeting of shareholders, and the cost to the Langlaagte Estate of the 54 claims and certain freehold ground amounts to £27,550.

Randfontein Central.

Total profit for the quarter, £64,176. The expenditure on capital account amounted to £102,418, and debenture interest to £30,945. The development footage sampled totalled 4,305 feet, and gave the following results: Payable, 2,540 feet, having an average value of 16.1 dwts. over 22 inches of reef; unpayable, 1,765 feet, having an average value of 9.2 dwts. over 15 inches.

Van Ryn Deep.

Total profit for the quarter, £159,553. The expenditure on capital account amounted to £3,373. The development footage sampled totalled 777 feet, and gave the following results: Payable, 722 feet, having an average value of 37.6 dwts. over 21 inches of reef; unpayable, 55 feet, having an average value of 12 dwts. over 11 inches.

Witwatersrand G.M.

Total profit for the quarter, £24,161. The expenditure on capital account amounted to £1,450. The development footage sampled totalled 810 feet, and gave the following results: Payable, 420 feet, having an average value of 12.4 dwts. over 31 inches of reef; unpayable, 390 feet, having an average value of 5.1 dwts. over 39 inches.

New State Areas.

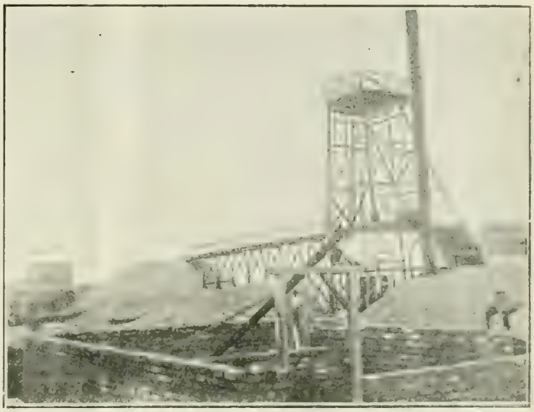
The expenditure on capital account for the quarter amounted to £111,842, of which £70,290 was spent on development and the balance on surface equipment and excavations and foundations for the reduction plant. A total of 6,601 feet of development was accomplished, 4,153 feet being on reef.

South Shaft.—2,360 feet were sampled, of which 1,350 feet were payable, having an average value of 19.7 dwts. over 29 inches of reef, and 1,010 feet were unpayable, having an average value of 5.9 dwts. over 16 inches.

North Shaft.—1,780 feet were sampled, of which 1,080 feet were payable, having an average value of 40.9 dwts. over 17 inches of reef, and 700 feet were unpayable, having an average value of 8.3 dwts. over 14 inches.

TRANSVAAL SILVER AND BASE METALS.

The report for the quarter ended 30th June, 1922, shows: Ore treated, 11,866 tons; estimated gross revenue from lead-silver bullion produced, £46,264, or 77·97s. per ton based on tonnage treated; less estimated shipping and realisation charges, £8,700, or 14·66s. per ton; leaving £37,564, or 63·31s. per ton; working costs, £32,202, or 54·28s. per ton; estimated working profit, £5,362, or 9·03s. per ton; sundry revenue, £144, or 0·25s. per ton; estimated profit for quarter, £5,506, or 9·28s. per ton. As far as the revenue from ore is concerned the above figures are not final, owing to the fact that account sales have not yet been received for the whole of the product for the quarter. At No. 1 shaft, the underground ore bin and ore passes were completed and put into commission. Skips with a capacity of two tons have replaced the cages, which have been transferred to the Brakfontein shaft, where buckets had previously been used. The development footage sampled during the quarter totalled 960 feet, and gave the following results:—Payable: 220 feet, having an average value of 9·0 per cent. lead and 8·7 oz. silver over 38 inches. Unpayable: 740 feet, having an average value of 1·5 per cent. lead and 1·4 oz. silver over 33 inches. The tonnage drawn from the surface dump has been steadily reduced during the quarter, and the full tonnage required by the mill can now be supplied from stopes. The concentration plant has continued to run smoothly during the quarter. The large rectangular furnace has worked satisfactorily. It has been found necessary to increase the de-sulphurising plant by the addition of one Huntingdon Heberlein roasting pot. This is being made locally, and will be in commission in August next. The new 13 in. x 26 in. Robey hoist at No. 1 shaft, equipped with two 2 ton skips, was put into commission and is working well.



View of Surface Plant, Transvaal Silvers.

WATER BOARD TENDERS.

The Rand Water Board invite tenders by August 10th for the erection of Filter House, Offices and Concrete Filter Tanks at the Board's Main Pumping Station, Vereeniging. For particulars apply at the office of the Chief Engineer, Rand Water Board, where copies of the contract documents may be obtained on or after Friday, the 28th July, 1922.

Progress on Goldfields Mines.

LATEST DEVELOPMENT RESULTS FROM ROBINSON DEEP, SUB NIGEL AND SIMMER AND JACK.

The quarterly reports issued by the mines of the Consolidated Gold Fields group this week reflect the position as at June 30.

Robinson Deep.

At the Robinson Deep the net profit for the quarter was £[illegible] and the amount spent on capital account was £[illegible]. The development footage accomplished during the quarter amounted to [illegible] feet. The footage sampled was [illegible] feet, of which [illegible] per cent. was payable, as follows:—Main Reef Leader, 1,345 ft., reef width 35·2 in., assay value [illegible] dwt., [illegible] inch-dwt.; South Reef, [illegible] ft., reef width 26·3 in., assay value 14·6 dwt., 384 inch-dwt.

Sub Nigel.

At the Sub Nigel the net profit for the quarter was £17,190. 3,134 feet were advanced on development during the quarter, at a cost of £18,177 7s. 9d. Of the footage advanced, [illegible] feet were sampled, of which [illegible] per cent. was shown payable, averaging 20·2 dwt. over 42 in. "C" Shaft Area: The drive eastward on the 19th level has so far failed to expose the chute encountered on the 18th level east. Winzing has been commenced on the pay chute encountered on the 20th level east. The winze on the 19a level, west of the auxiliary shaft, has attained a depth of [illegible] ft. and has shown consistently good values. Work is being carried on [illegible] good values having been found in the 16th west winze. Work was stopped in the [illegible] winze, and driving commenced east and west on the 17th level; no payable values have as yet been encountered. No. 1 Shaft: Work is proceeding in 21 east winze, with the object of opening up in depth the chutes found on the [illegible] shaft area. The cross-cut [illegible] on the 21st level west has not yet struck the footwall slate, progress being slow owing to the excessive hardness of the rock. Pay values were encountered on the 23rd level east (southern section) extending over a distance of 240 feet and averaging 9·8 dwt. over 42 in. The reef has been encountered in the 23rd cross-cut north, and driving has been commenced. Increase of Capital: In connection with the agreement entered into by the company with the New Consolidated Gold Fields, Ltd., on the 30th of November, 1917, the company's capital has been increased by 130,000 shares of £1 each to £905,000, and these shares will be issued to New Consolidated Gold Fields, Ltd., in [illegible] consideration for the company's [illegible] the mynpacht of the farm Grootfontein, which, in accordance with the abovementioned agreement, the New Consolidated Gold Fields, Ltd., have agreed to sell to the company. Dividend: A dividend (No. 19) of 3¾ per cent. upon the company's issued capital (£775,000) has been declared in respect of the six months ended 30th June, 1922, and is payable on or as soon as possible after the 10th August, 1922.

Simmer and Jack.

The Simmer and Jack made a loss of £7,006 for the quarter. The loss for the quarter is attributable to the low tonnage milled. During the strike period, when it was not possible to give proper attention to the maintenance of underground workings, caving in of drives and workings occurred in certain parts of the mine, and this has made it impossible to maintain a normal tonnage. The Milner shaft, through which the lower levels of the property will be worked, should be ready for use in August, and normal tonnage should thereafter be obtained.

Letters to the Editor.

THE S.A. RESERVE BANK.

To the Editor, *S.A. Mining and Engineering Journal.*

Sir,—In your issue of the 15th instant you state the "maximum dividend that can be paid is 10 per cent., *after* which surplus profits go to reserve in certain proportions until the fund equals the paid-up capital when the Government claims them. I would refer you to the clause in the original Reserve Bank prospectus dealing with dividends, as follows:—"After making provision for bad and doubtful debts, depreciation in assets, superannuation of staff, and all such items as are usually provided for by bankers and after payment, out of the net profits, of a cumulative dividend at the rate of 6 per cent. per annum on the paid-up capital, the surplus shall be allocated to reserve fund until such reserve fund is equal to 25 per cent. of the paid-up capital of the bank. Thereafter until the reserve fund is equal to the paid-up capital of the bank, one-half of the surplus shall be allocated to reserve fund, one-quarter to the Government, and the remaining quarter, not exceeding four per cent. of the paid-up capital, to stockholders; if that remaining quarter exceeds four per cent. of the paid-up capital, the excess shall be paid to the Government. When the reserve fund is equal to the paid-up capital of the bank, the net profits, after payment of a dividend of ten per cent. to stockholders, shall be paid to the Government; provided that for so long as any restrictions on the export of gold or on the convertibility of gold certificates are in force in the Union, a dividend in excess of six per cent. in all shall not be paid, and any profits after paying a dividend of six per cent. shall be placed to a special fund for strengthening the gold reserve of the bank." You will note that the bank cannot declare a dividend exceeding six per cent. until the reserve fund is equal to twenty-five per cent. of the paid-up capital of the bank, a matter of £250,000. Does this restriction warrant the present price of £140 per £100 share, at which price the yield to the investor is a little over 4¼ per cent.?—Yours, etc.,

FRED. L. REES.

[The matter was fully explained in our last issue.—Ed., *S.A.M. & E.J.*]

DO BANK CHARGES HANDICAP INDUSTRY?

To the Editor, *S.A. Mining and Engineering Journal.*

Sir,—A great deal has been written and talked about profiteering and undue profits being made, but so far nobody has said or written a word about the large profits made by our banking institutions. Why banks should distribute profits of 16 per cent. per annum—and in England some of them even distribute more—is difficult to understand. To make these profits out of the public they must overcharge, or in other words, "profiteer." If a man owns a house and he makes a net income of 8 per cent. that is considered ample, and if he is proved to make more the rents he collects are liable to be reduced. To show the burden of the present rates of exchange, for instance, it will be seen that the banks by charging 1½ per cent. on drafts on London penalise the mining industry to the tune of over sixpence per ton milled and the amount thus collected by the two banks is in the neighbourhood of half a million sterling per year. Everybody is trying hard to reduce working costs, but the banks step in and levy a formidable tax on the industry. This charge, of course, is also made on exports of produce of every kind and greatly hinders trade.—Yours, etc.,

FINANCIER.

The Week in the Sharemarket.

HARDENING TENDENCY AND HEALTHY UNDERTONE—GOOD JULY RETURNS LONDON INTEREST REVIVING.

A very healthy undertone and a distinct hardening tendency have been the order of the week. The optimistic feeling of the past few days shows every indication of continuing. [illegible] while London is constantly sending orders for the higher class goods [illegible] Exchange.

[illegible] but there is no doubt that the market is being materially assisted in this direction by the wealthier section of the community. [illegible] profits for July undoubtedly have very good foundation, and [illegible] costs may be expected in the current month's returns. Money in London is still very plentiful and we are reliably informed that any new issues offered to the public are many times over-subscribed.

The enormous wealth distributed during the war seems to be gradually settling amongst the middle classes, and [illegible] they should not shortly realise the advantages and possibilities of our gold industry at an early date.

	Fri. 21st.	Sat. 22nd.	Mon. 24th.	Tues. 25th.	Wed. 26th.	Thurs. 27th.
Anglo-Amer. Corp.	[illegible]	[illegible]	21 3*	21 7	[illegible]	21 9
Apex Mines	[illegible]	[illegible]	[illegible]			[illegible] 9*
Brakpan Mines	47 [illegible]	47 [illegible]	47 [illegible]	[illegible]	[illegible]	49 6
[illegible]	16 6*	[illegible]	[illegible]	16 0*		16 [illegible]
Bushveld Tins	[illegible]		[illegible]		0 7*	
Cinderella Cons.	2 [illegible]	2 [illegible]	2 [illegible]	[illegible]	2 [illegible]	2 6*
City and Subs.	2 2		2 2*		2 2	[illegible]
City Deeps	46 [illegible]	47 [illegible]	48 [illegible]	47 [illegible]		49 0
Con. Diamonds	16 1½*	16 [illegible]	16 1	16 1	16 0*	16 1
Con. Langlaagtes	14 6*	[illegible] 9*	14 9*	[illegible]	[illegible] 9*	15 0
Con. Main Reefs	11 7	11 [illegible]	11 [illegible]	12 1	12 [illegible]	12 [illegible]
Con. Mines Selection			14 [illegible]		14 [illegible]	14 0*
Coronation Colls.	[illegible]	[illegible]		[illegible]	36 0	
Do. Freeholds	[illegible]				[illegible]	
Do. Syndicates	[illegible]	4 2	4 [illegible]	4 1	4 2*	4 3
Crown Diamonds	[illegible]	[illegible]	6 0*	[illegible] 0*	6 0*	6 0
Crown Mines	[illegible]	42 [illegible]	42 [illegible]	44 6	44 6*	45 3
Daggafontein Mines	3 1*	3 [illegible]	3 1*	3 2	3 1*	3 1*
East Rand Coals					1 4*	1 2*
East Rand Deeps		0 7	0 [illegible]	[illegible]	0 10*	0 9*
East Rand Minings		11 6†			11 [illegible]	
East Rand Props	7 10*	7 10*	8 3*	9 0	9 0	[illegible]
Eastern Golds	0 8	0 8*	0 7*	0 6*	0 6*	0 6*
Frank Smith Dmds	3 6*	3 5*	3 5	3 5*	3 4*	3 6*
Geduld Props.	64 0	64 6	64 3	65 6	65 0	[illegible]
Govt. Areas	[illegible]	97 6	97 6	97 6*	98 0	97 6
Hume Pipes	15 0†	14 0†		12 6*	13 0	13 0
Knight Centrals	3 11*		4 0	4 0*	4 1*	4 2*
Lace Props.	8 6*		8 9*	8 0*	8 9*	[illegible]
Leeuwpoort Tins	5 3		4 9*	5 0*	5 0*	5 9
Luipaardsvlei Est.				3 6*	3 0*	[illegible]
Lydenburg Farms	4 0†	3 7*	3 7*	3 7*	3 [illegible]	3 8*
Meyer and Charltons			63 0*	63 0*		
Middelvlei Estates	1 3*	1 3*	1 3*			1 [illegible]
Modder Wests	5 0*					
Modder B's	34 3	[illegible]	[illegible]	33 6	34 [illegible]	[illegible]
Modder Deeps	43 9	44 3*	44 [illegible]	44 3	44 0	44 0
Modder Easts	7 [illegible]	7 8*	7 7	7 6*	7 6*	7 7
Natal Navig. Colls.				28 6*	28 0*	28 0*
National Banks	[illegible]		220 [illegible]	—	—	218 9†
New Eland Dmds.	35 0†	35 0†	35 0†	33 0*	33 0*	33 0
New Era Cons.		6 6*	7 [illegible]		7 [illegible]	[illegible]
New Geduld Deeps	1 6*	1 6*		1 [illegible]	1 [illegible]	
New Kleinfonteins	7 3	7 3*	7 [illegible]	7 0	7 0*	7 6
New Modders	77 6*	76 9*	77 3	77 [illegible]	77 [illegible]	77 6
New Primrose					3 0*	4 [illegible]
New State Areas	33 3	32 [illegible]	[illegible]	[illegible]	33 0	33 [illegible]
Nourse Mines	16 6	16 [illegible]	16 [illegible]	16 10½	16 9*	16 9
Pretoria Cements	45 [illegible]	44 9*	45 3*	45 3*	45 3*	45 6*
Randfontein Central	11 0			[illegible]	12 0	12 0
Do. Estates	18 [illegible]	18 [illegible]	18 [illegible]		20 0	19 10½
Rouxville Dmds.	1 [illegible]	—	1 2*	1 2*		1 [illegible]
Roberts Victors	8 [illegible]	8 [illegible]	[illegible]	8 0*		
Rooibergs	3 0*	—	3 1*	3 2*	3 3*	[illegible]
Ryan Nigels		4 0*			[illegible]	4 [illegible]
Rose Deeps	12 [illegible]	12 0*	12 [illegible]			
Simmer and Jacks	4 0*	3 10*	3 10*	[illegible]	3 10	3 10
S.A. Breweries	25 6*	—	25 6*		[illegible]	[illegible]
S.A. Lands	4 0*	3 11*		[illegible]	3 11	3 11*
Springs Mines	46 3	46 6	46 6*	[illegible]	47 0	47 9
Sub Nigel	12 3*	12 3	12 3	[illegible]	12 1*	12 1*
Swaziland Tins	[illegible]		[illegible]	[illegible]	[illegible]	5 0*
S.A. Alkali	15 3*	15 6*	15 6	15 3*	15 6*	[illegible] 6*
S.A. Townships	9 0*	9 0	[illegible]	[illegible]	[illegible]	[illegible]
Transvaal Lands						15 6†
Trans. G.M. Estates.	—	10 0*	10 3*	[illegible]	11 [illegible]	[illegible]
Transvaal Silvers	[illegible]	[illegible]	14 1*	[illegible]	14 [illegible]	14 0*
[illegible]				[illegible]	[illegible]	
Van Ryn Deeps	[illegible]	69 6†	67 6*	[illegible]	68 6*	69 0
Village Deeps		12 3*	12 0	[illegible]	12 [illegible]	[illegible]
West Springs	13 2	13 6	13 7*	[illegible]	[illegible]	[illegible]
Western Rand Est.	—	3 10*	3 10*	3 9*	4 [illegible]	—
Witbank Collieries	[illegible]		[illegible]	[illegible]	47 [illegible]	[illegible]
Witwatersrands				12 0*	12 0	
[illegible] Deeps	13 3*	14 [illegible]	—	14 9	15 0	15 9
Zaaiplaats Tins	2 0	1 [illegible]	[illegible]	[illegible]	2 0*	2 [illegible]
Union 5 per cent.	£102¼		[illegible]	[illegible]	—	£103[illegible]

* Buyers. † Sellers. a. Odd lots. b. Ex London.

A Small Power Press.

In the manufacture of very many articles small stampings or pieces of pressed metal are used in enormous quantities. Frequently, it is the custom for manufacturers who require such stampings to purchase them from firms specially equipped for their production. In other cases, however, where they are merely accessory to some machine or appliance, it is very convenient to be able to make them on the spot as required. For this purpose a British firm has produced a small power press of a very simple type and at a low cost. It can be bolted down on to a bench and used for pressing or stamping strips of metal, which are usually supplied in coils. One size of machine will give punchings up to 2¼ inches diameter, and it has a push of six tons. A smaller size deals with 1¼ inch punchings, and has a push of about two tons. In both cases the output is about one gross of pieces per minute. The power consumption of this machine is so small as to be practically negligible, and owing to the small number of wearing parts its output is consistently accurate.

MOTOR CAR FOR SALE

Chevrolet Car. Owner-driven, done 7,500 miles, in perfect order, and appearance like new. A guaranteed reliable car, at bargain price, as owner leaving for England. Inspection by appointment anywhere on the Reef.—H.O.R. 14, Central News Agency, Johannesburg.

NOW IN PREPARATION.

Special £1,000,000,000 Number

"S.A. Mining & Engineering Journal" Year Book for 1922-23.

In 20 parts complete, in one large and handsomely produced volume.

PRICE 10/6. POSTAGE 1/6 EXTRA.

Order your copy now from the Publishers, 176 to 180, Stock Exchange Buildings. P.O. Box 963. Telephone 913. Johannesburg.

ROBINS CONVEYOR PULLEYS

¶ Conveyor Pulleys must be of special design because of their slow speed of rotation and the consequent heavy strain on the end pulleys.

¶ Robins Conveyor Pulleys are the product of careful thought and long experience in design and manufacture.

¶ All pulleys are cast in one piece of the best grey iron to eliminate the breaking of shafts and pulleys when pulleys made sectionally and bolted together are used

¶ The arms and rims are heavily ribbed, thus allowing a proper flow of metal in pouring, to prevent shrinkage strains.

¶ The rims are finished with extra high crowns.

¶ Standard sizes of End, Bend, and Snub Pulleys carried in South African Stock for prompt delivery

Robins Conveyors (S.A.), Ltd.
(Head Office: Robins Conveying Belt Co., New York, U.S.A.)
BOX 4736, 'PHONE 4182, JOHANNESBURG
BOX 811, 'PHONE 3383, DURBAN

REID BROS.
— (S.A.), LIMITED. —

Sole Agents for:

CARRON COY.—HAULAGE GEARS, Etc.
ANDERSON, BOYES & COY.—ELECTRIC COAL CUTTERS.
HARDY PATENT PICK COY.—"HARDIAX" AIR COAL CUTTERS.
BLANTYRE ENGINEERING COY.—SCREENING PLANT.
WM. ARNOTT & CO.—CORNISH AND LANCASHIRE BOILERS.
QUASI-ARC ELECTRIC WELDING APPARATUS.
SMALL & PARKES—BELTING, PACKING, Etc.
FINNEY PATENT HAND PUMPS.
WELDLESS STEEL CHAINS.
CHAPMAN DOUBLE BALL BEARINGS.

JOHANNESBURG.
P.O. Box 802 'Phones 6070/1
AND AT DURBAN.

Kinghorn

Metallic Valves

SOLE AGENTS:

GEO. CRADOCK
—AND CO. (S.A.), LTD.—
75-77, CULLINAN BUILDINGS.

P.O. Box 316. Telephone 539.
Tel. Add.: "ROPES."
JOHANNESBURG.

Approved by Mines Dept., Home Office and Board of Trade

THE "PROTO"

SELF-CONTAINED OXYGEN BREATHING APPARATUS

for Rescue and Recovery work in Mines after Explosions, etc.

ADOPTED BY ALL THE PRINCIPAL RESCUE STATIONS IN THE UNITED KINGDOM, AND BY MANY COLONIAL AND FOREIGN GOVERNMENTS

SMOKE HELMETS
of various patterns.

For Gob Fires and other Short distance work in Collieries.
Simple. Light. Portable.

THE "NOVITA" OXYGEN RESUSCITATION APPARATUS FOR THE APPARENTLY ASPHYXIATED.

RESPIRATORS FOR ALL PURPOSES. OXYGEN COMPRESSION PUMPS. GAS ANALYSIS APPARATUS. ELECTRIC LAMPS, Etc.

SIEBE, GORMAN & CO., LTD. "NEPTUNE" WORKS and
187, WESTMINSTER BRIDGE ROAD, LONDON, S.E.1, ENGLAND.

Cables: "Siebe, London." Codes: A.1, A.B.C. 5th, Western Union, Bentley, Lieber, Marconi, Engineering and Private.

The South African Mining and Engineering Journal.

HEAD OFFICE: 176-180 Stock Exchange Buildings (2nd Floor), Fox Street, JOHANNESBURG, Union of South Africa.

Telephone **913**. P.O. Boxes **963** and **4573**.

Cables and Telegraphic Address: "MINING JOURNAL."

ANNUAL SUBSCRIPTION RATES: Oversea, £2; Union of South Africa and Rhodesia, £1 10s.; Local Delivery (Town only), £1 6s., payable in advance.

AGENTS FOR GREAT BRITAIN AND AMERICA: Argus South African Newspapers, Ltd., Byron House, 82-85, Fleet Street, London, E.C. 4.

Copies of this Journal are obtainable at all Branches and Agencies of the Central News Agency, Ltd., at all News Agents and Railway Bookstalls throughout South Africa, and at the London Agency as above.

CONTENTS

PAGE
Progress of the Natal Coal Mining Industry ... 1585
Messina Copper ... 1587
Working Costs and the Life of the Rand ... 1589
A Projected Roodepoort Amalgamation ... 1593
The Advance in Metal Prices ... 1594
Barnato Mines Development ... 1595
Progress on Gold Fields' Mines ... 1596
Letters to the Editor ... 1596
Share Market ... 1597
Topics of the Week ... 1599
Mining and Financial Position of the T.G.M.E. ... 1603
Rhodesian Section:
A Rhodesian Mine Flotation ... 1605
Shamva Mines' Results ... 1606
The Position of the Gaika ... 1606
Trade and Industries Section:
The Week in the Mining Material and Engineering Trades ... 1607

TOPICS OF THE WEEK.

The Mining Industrv Board.

The Mining Industry Board concluded its public sittings this week, after collecting a voluminous mass of evidence. Its terms of reference, it will be remembered, included an inquiry into the causes of the strike and an invitation to make recommendations in regard to the future administration of the gold mining industry. The possibilities of a differentiation in the working conditions in mines of different yield are also to be explored, and doubtless the very forcible evidence laid before the Board on this subject has had its due effect. Speaking on this matter, Sir Lionel Phillips, at the Central Mining meeting the other day, said: "I shall not discuss the complications and the field for dispute which the adoption of any such system would create. Viewing the matter purely in its economic aspect, it would be a serious, if not a vital, blow to investment in South Africa if needless expenditure were forced upon enterprises for philanthropic purposes, because they happened to be in a position to bear the burden. Any country adopting a policy of that description would forfeit the confidence of investors, because there is no limit to the application of such a system. I think that the reference must have been framed without sufficient consideration, and do not, therefore, apprehend that any sinister consequences will result." This would seem to be all there is to be said on the subject. As regards the future working of the industry it would seem that the date of the great reorganisation is too recent to admit of very exact estimates of the future. It is enough that things are shaping well, and that the long desired era of increased economy and efficiency is dawning for the industry.

A Last Word from the Chamber of Mines.

At the last quarterly meeting of the Chamber of Mines reference was made by the Acting President to a valuable statement on working costs and low grade tonnages which the Chamber was about to lay before the Mining Industry Board. That statement has now been completed and formally handed to the Board. It will be seen from the extracts printed elsewhere that the statement goes straight to the root of the whole economic issue, and that it provides the Chamber with a very forcible parting shot. The statement itself is presented in a highly condensed form and it is not easy to compress the facts and figures into any smaller space than that occupied by the portions printed elsewhere. At the risk of repetition, however, it may be noted that the statement is presented to the Commission with the object of bringing to its attention the relatively great importance of the lower-grade tonnage of the reefs of these fields. In examining the subject in detail the various mines affected are divided into four classes which are described and a prepared map draws attention to them in diagrammatic form. The map also indicates the position of various other gold-bearing reefs in the Witwatersrand area on which relatively little exploratory work has been done, particularly in recent years. A list of 35 mines is given under Class I., which consists of present producing mines which contain large quantities of ore which, under the conditions prevailing in 1921, could not be worked at a profit. It is shown that if working costs can be reduced to 15s. per ton milled the life of these mines will be prolonged to 26 years or nearly doubled.

Class II. embraces ten mines which from a variety of causes were compelled to cease operations long before their claim areas had been exhausted.

Class III. includes half-a-dozen mines which have sunk shafts to the reef and carried out a considerable amount of development and which have exhausted their cash resources. The fourth of the classes referred to includes very important areas of practically unexplored ground, situated mainly on the extreme western and eastern ends of the Witwatersrand, a very large proportion belonging to the Government. The capital required for the development of these areas would be large. The total gold contents of these areas are estimated to be enormous, and the importance of their exploitation to the country cannot be sufficiently emphasised. A summation of the additional tonnage estimated under the various classes is as follows:—Class I., 379,000,000 tons; Class II., 60,000,000 tons; Class III., 60,000,000 tons; Class IV., 225,000,000 tons; total, 724,000,000 tons. It has been stated that the present resources of producing mines are calculated at 316 millions of tons over 6 dwt. in value, and the importance of bringing into operation double this quantity would be of lasting benefit to the country. A reasonable assurance of a period of continuous efficiency bringing about a reduction in working costs would not only benefit the existing shareholders of producing mines, making their present holdings more remunerative, but they would no doubt feel some inducement to venture further capital, not only to expand existing enterprises, but to support new undertakings. Therefore permanently improved conditions would result in the following benefits to the State: (1) Longer life to the industry; (2) wider field for employment; (3) greater returns to investors; (4) attraction of new capital.

If the Brace Commission had done nothing more than evoke that statement it would have justified its existence. The facts are so patent and touch the economic life of the [illegible] in so many points that they merit the greatest possible measure of publicity. They set forth the whole case for lower working costs on the Rand in the fewest and plainest possible terms, and the moral of the whole thing is obvious to everyone. In their struggle to reduce costs the mine managers are not only fighting for their own existence, but for the very future of the white population of this country.

Rhodesia and the Union.

A long step forward in the negotiations between the Union and Rhodesia is the publication of the terms offered by the Union Government to the shareholders in the Chartered Company. For its railway and land rights and public buildings, etc., the Union will pay £6,836,500 to the company in the event of Rhodesia entering the Union. Mineral rights remain vested in the Chartered Company. The offer will be considered by the shareholders in London this week, and will, it is expected, be accepted, the terms offered being as favourable as could reasonably be expected in view of the Privy Council's judgment and the Cave award, though not more favourable than considerations of equity demanded. As soon as the decision of the shareholders is notified the Union Government will be in a position to publish the political and other terms on which Rhodesia can be incorporated as the fifth Province of the Union.

With regard to the provision of funds for land settlement, new railways and other purposes, the Union Government is expected to offer an annual development grant to serve as a minimum for a term of years, but it is impossible to mention the precise figure. Some increase of taxation is regarded as certain, whether Rhodesia joins the Union or whether she determines to paddle her own canoe, and it is asserted that the Union can offer a far more substantial *quid pro quo* than it is possible for the advocates of responsible government to hold out to the electors.

It is regretted that the attempt to arrange for the acquisition of the mineral rights of the Chartered Company was not successful. It may, however, be conjectured that the difficulty was less in arriving at a satisfactory basis of expropriation than in carrying through the operation at the present time. Certain it is that if incorporation should take place it must be the object of the Union Government to acquire the mineral rights of the Chartered Company at the first opportunity. In the meanwhile the payment of royalties to the Chartered Company instead of to the Union Government will hardly prejudice producers, and there seems to be no reason why the existing mineral laws should not remain in force.

Efficiency and Bonus Schemes.

Five examples of new methods of mining being tried on the Witwatersrand were given before the Mining Industry Board this week. It was emphasised that all these schemes were subject to modification or extension as the present was a transition stage from old conditions to new. The details of these schemes varied but, it was stated, there was a distinct similarity in the objectives, namely, increased incentive for efficiency and economical work, incentive for closer supervision by the shift-boss, and incentive for a co-operative spirit among the workers in increasing efficiency and reducing working costs. Each of these schemes was considered to be specially applicable to the mine upon which it had been evolved. After a period of trial, it might be possible to construct from them a scheme of bonus as the main principles were concerned. The first scheme, submitted by Mr. J. Whitehouse, of the Village Deep, was concerned with the control of stoping operations by shift bosses in small sections. Other schemes were submitted by Mr. S. Beaton, the manager of the Nourse Mines, by Mr. H. R. Hill, consulting engineer of the Modder Deep, by Mr. Greathead, of the Simmer and Jack, and by Mr. Miles Sharpe, of the New Modder. The scheme submitted by Mr. E. Miles Sharpe, New Modder, was as follows: Stoping: The mine was divided into efficiency classes, and the price paid per fathom was calculated to give 5s. per shift at certain definite standards of efficiency per machine shift. For every additional point of a fathom per machine shift 2s. per shift would be added to the earnings. For every lb. of explosives per fathom saved under the standard set, 1s. per shift would be added to the earnings. If a bonus was obtained under fathomage standard and a loss on explosives standard, 1s. per shift would be deducted from first-mentioned for every lb. of explosives per fathom in excess, provided that only sufficient was earned under fathomage bonus to meet such debit. Machine shifts worked should in all cases be white shifts multiplied by the number of machines allotted. In addition, there was a tramming bonus based on trucks per native shift, by which the trammer might earn up to 5s. per shift bonus. The machineman received half of whatever bonus rate per shift the trammer made. *Per contra*, the trammer also received half the bonus rate per shift (on breaking only) received by the machineman. Development: A price per foot was set for the various classes of development, with a standard explosives efficiency. For each lb. of explosives per foot used above this standard, 1s. per shift would be deducted from earnings. It was intended to embrace all other classes of work ultimately, such as pipe-fitters, etc., up to and including the shift bosses.

Ex-Enemy Shares and Property.

In a statement made by Sir Hamilton Fowle to the *Cape Times*, and quoted in our last issue, it was shown that the total amount realised by the sale of enemy shares was £7,750,000, of which £4,450,000 was the sum realised during the past three months. It may be explained that the proceeds go to the credit of the Union Government which issues bonds to the enemy holders redeemable after 30 years and bearing interest during that period at 4 per cent. In effect the Government thus raises a long-term loan of nearly eight millions at considerably less than the current rate of interest. Yet at the same time the Union is dealing much more generously than any other country with enemy holders of property. In his evidence before the Public Accounts Committee last May, Sir Hamilton Fowle explained the position as to claims by South African nationals against enemy subjects. Debts due by German subjects to South Africans have been paid and are " practically finished." Claims against the German Government " in connection with shipping disasters, loss of life and personal effects " are being liquidated out of Treasury Funds, the payments to rank ultimately as a debit against the German Government. About £50,000 has been paid out already by the Treasury in this way; but " claims are continually coming in " and the temporary cost to the Treasury may ultimately be " about £100,000 to £120,000." There are, too, South African claims " in respect of property in Germany—property belonging to Union citizens, which property has been confiscated by the German Government." The thirty-year credit certificates issued by the Union Government to the German owners of property here are subject to a five per cent. deduction, as a guarantee of compensation to South Africans who have such claims. How far there has been confiscation of this kind by the German Government is not known yet, and Sir Hamilton Fowle, pressed on this point at the Public Accounts Committee, said that it was too soon as yet to know whether there had been such confiscation at all. But the largest class of claims against Germany is, of course, that which includes such losses as merchandise lost at sea, repayment of pension and separation allowances, and the like. For these the Union Government has put in its claim through the Reparations Commission. The amount is seven millions; though few South Africans realise that this country is interested to this extent in the Reparations question. Finally, all assets of German subjects resident or domiciled in the Union at the outbreak of war have been released to their owners; and the value of the assets thus restored approximates to four millions.

Notes & News.

S. A. M. Year Book.

IMPORTANT ANNOUNCEMENT.

The special number of the "S.A.M. and E.J." Year Book, which is now in preparation, will contain a valuable section on the coal fields and collieries of South Africa, Rhodesia, the Congo, and Portuguese East Africa. The Natal, O.F.S. and Transvaal coal mines will be dealt with at considerable length, and all details concerning area, finance, outputs, plant and character of coal will be given. There will also be special articles on Durban, Delagoa Bay and Beira as coaling ports, and these, combined with descriptions of the geology of the coal fields and the railway systems which serve them will revise and bring up to date the valuable data contained in the Special Coal Numbers of the Journal issued in 1919 and last year, and which universally were acknowledged to represent the best, most reliable, and comprehensive literature on the coal fields of South Africa that has been issued. The forthcoming Special Number will also contain valuable articles on the by-product industry.

* * *

The late Mr. J. J. Garrard.

Cable news has been received of the death of Mr. J. J. Garrard, who was well known throughout this country as for many years consulting engineer to the "T.C.L." Since leaving the Rand the late Mr. Garrard was with the Central Mining and Investment Corporation as consulting engineer to the Premier Hydraulic Tin Mines of Nigeria, Ltd., and he appears to have been on his way back from the West Coast when he succumbed to fever on landing at Plymouth. Before becoming consulting engineer to the "T.C.L." he was for some time geologist to the Natal Government, and in that capacity he made valuable reports on the geology of parts of Zululand. His other published works include "The Mining Investors' Guide," which is now out of print, and a lengthy paper on the hydraulic recovery of tin from the Swaziland alluvial fields, read before the Institution of Mining and Metallurgy. Of a kindly and genial disposition, the late J. J. Garrard will be deeply regretted by a wide circle of old friends on the Rand and throughout South Africa, and deep sympathy will go out to his widow and young family.

* * *

Henderson's Transvaal Estates.

The report of Henderson's Transvaal Estates for the year ended 31st March, 1922, shows a net profit of £11,734, plus £42,571 brought forward, making £54,305. The directors have utilised £30,000 of this amount, together with £15,000 from reserve for depreciation in investments, in writing off depreciation in stocks and shares ascertained since the end of the year, and recommend that the balance of £24,304 be carried forward. The directors regret that they are unable to recommend payment of a dividend. The reserve account will remain at £45,000, exclusive of the balance of £25,000 specially allocated for depreciation in investments. The gross revenue last year displayed a shrinkage, and this, combined with a realised loss on Daggafontein Mines holdings, is reflected in a greatly reduced profit and continued absence of dividend. The profits of the colliery interest were affected by the strike, the Asbestos Company cannot sell its produce, and the Cement Company has run up against overseas competition. The Delagoa Bay subsidiary, however, is in a much better position, while the present tendency of conditions affecting the Rand suggests that the gold holding (Daggafontein) may be refinanced later on, while an improving gold industry will eventually be reflected in greater general prosperity from which an improved demand for land should spring.

Netherlands Bank of South Africa.

In the report of the Netherlands Bank of South Africa the interesting point is made that the establishment of the South African Reserve Bank has rendered it possible for the Netherlands Bank to obtain interest on a greater proportion of its liquid resources than formerly by investing temporarily in Union of South Africa Treasury bills, which can always be rediscounted. The bank refrained from expanding its business and continued to keep its reserves liquid against a lifting of the severe trade depression, which latterly has been suffered. Net profits dropped £5,400 to £24,900, but before striking this figure all the year's losses were provided for fully. In South Africa the profit made was about the same as in the previous twelve months. Below will be found a comparison of the results for the past three years:—

	Year ended 31st December.		
	1919.	1920.	1921.
Net profit	£21,400	£30,300	£24,900
Dividend	5½%	5½%	4%
Carry forward	10	700	2,800
Capital	240,000	240,000	240,000
Reserve	41,600	44,900	45,000
Note circulation	79,700	109,000	72,700
Deposits etc.	1,023,300	1,047,000	1,119,300
Cash	582,700	391,500	317,600
Investments	60,800	54,400	266,500
Bills, loans, etc.	711,100	971,200	863,700
Total assets ...	1,558,300	1,698,800	1,721,600

Current accounts contracted slightly, but the total, including fixed deposits, acceptances and other liabilities, showed an advance. A good deal of money flowed out of cash and also presumably bills into investments.

* * *

Manufacturing Activity.

The first preliminary and unaudited results of the Sixth Industrial Census of the Union, taken in 1922 in respect of the period 1920-21, are published in a table issued by the Census Department. Taking all industries as a whole, an increase over the figures for the previous census is recorded in the number of establishments, the number of employees, the amount paid in salaries and wages, the value of fuel and materials used, and the value of the aggregate output. There was a decrease in the total value of South African materials used. The greater proportion of the increase noted in employees' salaries and wages paid, fuel and materials used and value of output is accounted for by a largely-increased activity on the part of the railway workshops and to a smaller extent in the building industry. The following summary indicates the principal increases and decreases, comparing 1920-21 with 1919-20:—

Increases.

Industry.	Establishments.	Employees.	Output (£1,000).
Treatment of raw material ...	2	12	—
Stone, clay, etc.	—	275	296
Metals, engineering, etc. ...	—	1,055	4,099
Food, drink, etc.	60	1,025	928
Clothing, textiles, etc. ...		—	
Books, printing, etc.	3	87	707
Vehicles	76	—	77
Chemicals, etc.	6		
Heat, light and power	25	804	701
Leather and leatherware			
Building and construction ...	9	3,452	1,874

Decreases.

Industry.	Establishments.	Employees.	Output (£1,000).
Treatment of raw material ...	—	—	892
Stone, clay, etc.	31		—
Metals, engineering, etc. ...	21	—	—
Food, drink, etc.	—	—	—
Clothing, textiles, etc.	38	2,276	584
Books, printing, etc.		—	—
Vehicles		94	—
Chemicals, etc.		123	643
Heat, light and power		—	—
Leather and leatherware ...	6	1,096	1,150
Building and construction ...	—	—	—

The figures show a total net increase of 3,121 employees, and of £5,403,000 in output.

To Lower your Operating Costs:

A Lubrication Audit

Business to-day protects itself against waste and inefficient methods—by audit.

An audit gives an exact picture of present conditions, and points the way to improvement.

We would like to call to your attention the possibilities of a Lubrication Audit in your plant.

See details in column.

Only a Lubrication Audit can give you full information, and open the way to new economies which will soon be reflected in lower operating costs.

Present industrial conditions make it urgent that you take this step toward improved results at once. Ask our nearest branch to-day about the Lubrication Audit.

GARGOYLE

Lubricants

A grade for each type of service

THE LUBRICATION AUDIT

Explained Step by Step (in condensed outline)

INSPECTION: A thoroughly experienced Vacuum Oil Company of S. A. Limited, representative in co-operation with your plant engineer or superintendent makes a careful survey and record of your mechanical equipment and operating conditions.

RECOMMENDATIONS: We later specify in a written report, the correct oil and the correct application of the oil for the efficient and economical operation of each engine and machine. This report is based on:

(1). The inspection of the machines in your plant.
(2). Your operating conditions.
(3). Our 25 years of lubricating experience with all types of mechanical equipment under all kinds of operating conditions.
(4). The outstanding experience of the Vacuum Oil Company in manufacturing oils for every lubricating need.

CHECKING: If, following our recommendations in this audit, you instal our oils, periodical calls will be made to check up the continuance of the desired results.
For the above Free Service address our nearest branch office.

BRANCH OFFICES:

Cape Town **Johannesburg** **Pretoria**
Kimberley **Bloemfontein** **Mossel Bay**
Port Elizabeth **East London** **Durban**
Lourenco Marques.

VACUUM OIL COMPANY OF SOUTH AFRICA, LTD.

STAFFORD MAYER COMPANY **(South Africa), LIMITED.**

(INCORPORATED IN MAURITIUS.)

30, Commercial Road, DURBAN.

Codes: Bentley's A.B.C. 5th Edition. P.O. Box 1381. Telephone 3273.
Cable and Telegraphic Address: "STAFMAYER," Durban.

AGENTS FOR:

ENYATI COLLIERY, LTD.
BUFFALO COLLIERY, LTD.
BERNICA COLLIERY, LTD.
BOSCHHOEK ANTHRACITE COAL, LTD.

(INCORPORATED IN MAURITIUS).

Telephone No. 80. Telegrams and Cables: "ENYATI." P.O. Box 31, Vryheid, Natal.
Codes: Broomhall's Imperial Combination; A.B.C. 5th Edition.

ENYATI, BERNICA and BUFFALO COLLIERIES are Contractors to the Admiralty and South African Railways.

FIRST GRADE Coal supplied for Export, Bunkers and Industrial Purposes.

AGENTS FOR **ALBION SHIPPING CO.,** PORT LOUIS, MAURITIUS.

Mining and Financial Position of the T.G.M.E.

EFFECT OF LOWER PREMIUM, HIGHER WORKING COSTS, AND DECREASED YIELD—COMPREHENSIVE DEVELOPMENT PROGRAMME—REPORTED RICH STRIKE.

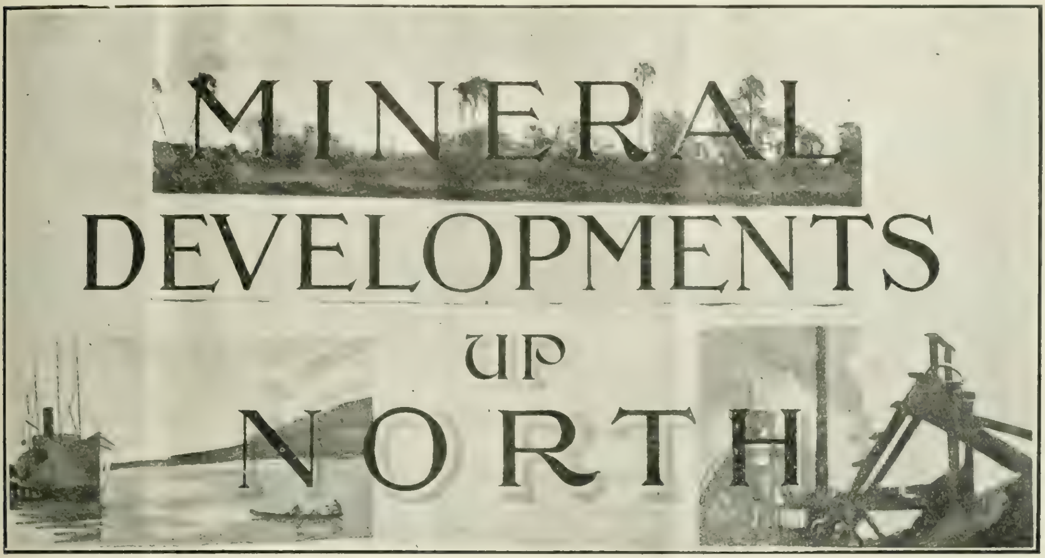
A rich strike is reported this week from the T.G.M.E. In the meanwhile, we learn from advance copies of the annual reports that last year's working expenditure continued high, but this was in part due to the additional activities in development and prospecting. It must also be remembered that certain items, such as claim licences and concession rents, have been included under mine working costs, which previously figured as head office charges. There has been a fall in price of certain stores, and reductions have been effected in the cost of labour. These economies are gradually coming into operation, and their cumulative effect may be expected to be more noticeable in the current financial year. Against this must be set the further tendency of gold to fall in realisable value. European and head office expenses show a decline, owing to the transfers above mentioned, and to drastic economies which have been effected. The position with regard to dividends was fully dealt with by the chairman in his address to shareholders on the 22nd September last. He then expressed the hope that the directors would be able to make a satisfactory declaration in March of this year. Owing to the continued fall in the price of gold, the profits for the half year were, unfortunately, so small that this hope was not realised. The policy of the board, however, remains as then stated, and it is intended to resume the payment of dividends so far as permitted by profits earned. Since the close of the financial year the Central Mining and Investment Corporation, Ltd., has successfully concluded negotiations for acquiring enemy shareholdings. These have been offered to the company at the price paid, viz., 7s. 6d. per share, plus a commission of 5 per cent. to the Central Mining and Investment Corporation, Ltd., and the legal and other expenses involved. The directors accepted this offer, and decided to cancel the shares—in all some 33,000—and to reduce the capital of the company accordingly. Extraordinary general meetings of shareholders will be convened for giving effect to this decision

The consulting engineer, the Central Mining and Investment Corporation, Ltd., wrote:—I beg to submit the following report upon the operations of your company for the year ended 31st March, 1922. The salient features of the work of the past two years are set out hereunder:—Tons milled: Year ended 31st March, 1921, 194,560; year ended 31st March, 1922, 186,630. Yield per ton: 1921, 6·74 dwt.; 1922, 6·49 dwt. Revenue per ton: 1921, 37s. 1d.; 1922, 32s. 8d. Working costs per ton: 1921, 29s. 1d.; 1922, 30s. 10d. Profit per ton: 1921, 8s.; 1922, 1s. 10d. Working profit: 1921, £77,700; 1922, £17,251. Sundry revenue: 1921, £12,052; 1922, £11,165. Total profit: 1921, £89,752; 1922, £28,416. Development footage: 1921, 40,463; 1922, 49,405. Ore reserve, milling tons: 1921, 602,870; 1922, 673,765. Average value of ore reserve, dwt. per ton: 1921, 8·5; 1922, 8.0. The result of the year's operations, measured in terms of profit earned, was far from satisfactory, the profit produced by the mines being only £17,251, as against £77,700 for the preceding financial year. This represents a decrease of 6s. 2d. per ton milled, made up by three factors: (a) Decline in the price of gold, representing 3s. 1d. per ton milled; (b) increase in working costs, representing 1s. 9d. per ton milled; and (c) decrease in the yield, representing 1s. 4d. per ton milled. The increase in working costs was largely due to the more vigorous development and prospecting policy adopted during the latter half of the year, consequent on the improvement in the native labour supply. The decline in yield was general, but more severe at Elandsdrift and Vaalhoek than at the Central Mines. The low grade of the ore now being supplied by the Central Mines renders the immediate outlook unpromising. Every effort is being made to reduce operating costs, but the difficulties to be overcome are considerable, the mines being scattered and, in many instances, long distances from the mill. It appears probable that some assistance will be derived during the ensuing year from a decline in the price of stores. Prospecting operations have resulted in ore of average grade being found at several localities, but such discoveries are not of outstanding importance, in that they merely increase the relatively large supply of payable, but not highly profitable, ore already at the company's disposal. It is imperative, however, that this work be energetically followed up, as the area to be covered is large, and there is still a possibility of the company being restored to its one-time prosperity by the discovery of a rich area approaching in value some of those encountered in the past. The ore reserves show an all-round increase in quantity, but the value has fallen by 0·5 dwt. per ton. This position is mainly due to the opening up of considerable tonnages of ore of a grade somewhat below normal in the Chi, Beacon Hill, Columbia Hill shales and Ponieskrantz North mines, while at Elandsdrift the decline in value is accounted for by the greater milling width on which the estimate has been framed. A comprehensive programme has been adopted at the Vaalhoek Mine with a view to exploring the Glynn's Reef in the river section, and there is a possibility of a large tonnage of ore being developed in this area during the next two years. Development and prospecting operations are being actively conducted at the Elandsdrift Mine, and a large tonnage has been exposed on the low-grade ore body known locally as the Blow. There are indications that this deposit will eventually prove a valuable asset to the company.

The general manager, Mr. R. A. Barry, writes, *inter alia*:—Prospecting operations: The native labour supply began to improve towards the end of 1921, but only in January, 1922, did the supply really become adequate for the work in hand. However, for the last two months of the financial year native labour was abundant, and advantage was taken thereof to push prospecting in every direction. The total expenditure for the year on prospecting operations amounted to £16,219 3s. 5d., an increase of £4,595 17s. 9d. on the previous year, which is reflected in the work done as summarised below, viz.:—Summary of prospecting operations:—Feet driven: Central, 11,856; Elandsdrift, 2,849; Vaalhoek, 333; total, 15,038. Feet risen: Central, 878; Elandsdrift, 49; Vaalhoek, nil; total, 927. Feet sunk: Central, 693; Elandsdrift, 512; Vaalhoek, 249; total, 1,454. Feet reopened, etc.: Central, 3,334; Elandsdrift, nil; Vaalhoek, 362; total, 3,696. Feet cutting: Central, 4,134; Elandsdrift, 365; Vaalhoek, nil; total, 4,499; feet trenched, etc.: Central, 1,498; Elandsdrift, nil; Vaalhoek, nil; total, 1,498. Central Mines area: The Chi Prospect on the Portuguese Reef was further proved in the early part of the year, and turned over to development as a definite development asset as distinct from a prospect. The ore reserves now stand credited with some 33,000 tons of payable ore, valued at 6·98 dwt. per ton, from this area, and further prospecting is afoot to test the extension of the pay reef in this vicinity—a satisfactory outcome of much hard work over an extended period. Good results have also been secured on the Graskop Hill section, where the Portuguese Reef has been proved in Jubilee North, and a small tonnage of 7·5 dwt. reef has been added to the ore reserves, with the promise of more. At Beacon Hill some encouraging results have been met with on the Theta horizon, whilst prospecting work on the Duke's Hill extension and in the area taken over on tribute discloses hopes of a payable, if low, grade tonnage. On the Beta horizon operations have been resumed at all the promising points abandoned in times of labour shortage, and, on the whole results are satisfactory, despite very thin reef. Prospecting work on the shale horizon, both in Columbia Hill and elsewhere, has not yielded any really satisfactory results, but this must not be confused with the Columbia Hill Mine on the shale reef, which is no longer a prospect, but yields a definite payable tonnage now standing in ore reserves at 53,000 tons, valued of 1 dwt. per ton. Considerable work has been done in the areas held by the company under option of purchase on tribute, viz., Columbia Hill Extension, Beta Hill Claims, and Duke's Hill Extension areas, with the exception of some promise of payable Theta reef in the Duke's Hill area, no encouragement has yet been met with. Shafts are now being sunk to test the lower and somewhat difficult areas, which add also greatly to the expense and difficulty of prospecting, and of necessity complicates the problem by calling for the provision of power both for haulage and for pumping purposes. Elandsdrift: At Elandsdrift prospecting has been actively carried on, and working costs have been charged with 2s. 1·3d. per ton milled on this account. Water has been encountered at many points, and nowhere is the work continuously very easy or cheap. Some encouragement is being met with at a couple of points in the north-east section, but much of the work gives barren results. Preparations are afoot to test the reef by means of a shot drill, which, if successful, should prove of considerable value. On the whole it may be said that prospecting, though adding considerably to working costs, is holding out reasonable hopes of increasing the mining life of the property. Vaalhoek: At Vaalhoek the total prospecting footage was not high, but much of this was very expensive, difficult and slow work against heavy water. Results east of the main Vaalhoek dyke have been universally disappointing, but on the extension of the mine in the river section to the west and north-west of the Vaalhoek dyke the promise has hitherto been encouraging. Work is also being continued on the Vergunning section, where much dislocation has taken place consequent upon settlement of the strata. General: Unfortunately, the difficulties and expense of prospecting work are on the increase, and the scarcity of native labour often hinders progress. It is, however, of the greatest importance that the exertion of every possible effort should be continued at high pressure to prospect the company's large areas.

Development and Mining.—Central Mines: As labour became available development work was gradually increased until at the end of the company's year every available face was being worked. An amount equal to 4s. per ton milled was charged to working costs under this head, totalling some £29,248 19s. 5d., and the development provision fund has reached the satisfactory figure of £31,880 2s. 4d. On the whole results have been satisfactory, and payable ore reserves have been increased, though the average grade is not high. Duke's Hill Mine: An appreciable tonnage of pay ore has been opened up in the footwall of the older portion of the mine, and it is hoped that the life of this mine may be considerably prolonged. Beacon Hill Mine: A fair tonnage of payable ore is available here. Peach Tree Mine: The tonnage, though small, has remained fairly constant for the year. Iota and Iota South Mines continue to be low-grade propositions. Theta, Theta Extension and Theta North Mines: These mines have just about held their position. Reefs are thin, work is scattered, and an increasing length of old drives has to be maintained. Brown's Hill Mine: Ore reserves show a tendency to decrease. Mining conditions are far from simple, and only constant attention to efficiency enables work to be kept going. Graskop Mine: Ore reserves show an improvement, but the mine is a very difficult one owing to the existence of large old workings, together with heavy quantities of water and heavy strata. Jubilee North Mine now constitutes a new factor in the ore reserves. Though the payable tonnage hitherto opened up is small, the promise for the future is fair. Columbia Hill Shales Mine: Results here have been very satisfactory despite the varying nature of the reef and reef values. Ore reserves have increased, and values are well above the general average of Central Mines. Ponieskrantz North Mine: Development has been pushed well ahead, but values have been poor. Payable ore reserves show an increase, and there has lately been some promise of better values in the south end of the mine. Chi Mine: This has been taken over from prospecting, and work is now afoot to couple up the mine to the Central mill, a work of some magnitude owing to the distance which ore has to be transported. Development has been satisfactory, and it is hoped that the promise for the future will hold. Elandsdrift Mine: Work has made good progress of late, but development is not so promising as it was with regard to values. Ore reserves have, however, been slightly increased during the year. The water difficulties show no tendency to decrease, and as the mine gets deeper the mining problems press more heavily. Of these, the inadequacy of available power has been one of the greatest difficulties, and though a steam plant capable of yielding some 200 h.p. is now in course of erection, it is to be feared that this more expensive form of power will adversely affect costs. It is of the utmost importance to the company, and indeed to the whole district, that the cheap water power which exists so near at hand should be turned to account. The mine itself is in better condition than it has been for some time, and the indications point to the possibility of fresh and favourable developments in the future. An outbreak of East Coast fever added greatly to the difficulties and costs of transport, necessitating the substitution of mules for oxen. Vaalhoek Mine: Ore reserves show an increase, and the development faces continue to give satisfactory if somewhat varying results. An ambitious programme is in hand for providing for the future of the river section, and for exploring difficult areas lying to the west of the proved mine in this vicinity. Working costs are suffering as a consequence, added to which the increased prospecting and development charges have affected the position considerably. Extensive renovations of the reduction plant have been effected, and improvements to the aerial gear are now in hand. Values are on the whole satisfactory, but some time must elapse before the present underground schemes can attain their full effect, when it is hoped that the effort and expense will be rewarded. Pumping difficulties are very great for such a small mine. Summary of development operations:—Central: Driven, 26,370 ft.; risen, 2,541 ft.; sunk, 970 ft.; re-opened, etc., 7,299 ft.; total, 37,180 ft. Elandsdrift: Driven, 5,651 ft.; risen, 183 ft.; sunk, 222 ft.; re-opened, etc., nil; total, 6,056 ft. Vaalhoek: Driven, 5,905 ft.; risen, 57 ft.; sunk, 106 ft.; re-opened, etc., 101 ft.; total, 6,169 ft. Totals: Driven, 37,926 ft.; risen, 2,781 ft.; sunk, 1,298 ft.; re-opened, etc., 7,400 ft.; total, 49,405 ft. The following are the ore reserves calculated as at 31st March, 1922:—Central Mines, 518,624 tons; 6·98 dwt. per ton. Elandsdrift Mine, 76,906 tons; 14·45 dwt. per ton. Vaalhoek Mine, 78,235 tons; 8·30 dwt. per ton. These figures show an increased tonnage at each centre, but values are slightly lower. At the Central there is an increase of 56,666 tons, with a decreased value of 0·3 dwt. per ton. At Elandsdrift the tonnage has increased by 3,256 tons, but values have decreased by 1·75 dwt. per ton. At Vaalhoek there is an increased tonnage of 10,973 tons, with a decreased value of 0·34 dwt. per ton.

The revenue from gold, if based on standard value only, would have been £52,384 0s. 5d. less than that obtained. In such case a working loss of £35,133 3s. 1d. would have resulted from mining operations (excluding sundry revenue and interest), instead of the profit of £17,250 17s. 4d. actually realised. The average grade of ore sent to the Central mill was 6·514 dwt. per ton, as compared with 6·609 dwt. per ton for the previous year. At Elandsdrift the value of ore milled was 12·655 dwt. per ton milled, as compared with 13·907 per ton for the previous year. At Vaalhoek the value of ore milled was 7·782 dwt. per ton milled, as compared with 8·461 dwt. per ton for the previous year. Comparisons of tonnages milled with those of the previous year are as follow:—At Central a decrease of 9,050 tons; at Elandsdrift an increase of 1,105 tons; at Vaalhoek an increase of 15 tons. Working costs at Central Mines, including prospecting, show an increase of 1s. 5·1d. per ton milled, due mainly to the increased expenditure on development, prospecting and the depreciation of stores following upon post-war conditions. At Elandsdrift the increase in working costs of 3s. 10·6d. is due mainly to increased expenditure on development and prospecting, whilst pumping and power costs have also increased. At Vaalhoek the increase of working costs of 5s. 9·5d. per ton milled is accounted for by the increased expenditure on development and prospecting, together with the cost of renovation of the mill and the restoration of the damage done by the cyclone. The royalty paid to the company by tributors during the year amounted to £1,543 3s. 6d.



MINERAL DEVELOPMENTS UP NORTH

A RHODESIAN MINE FLOTATION.

A long period has elapsed since the flotation of a Rhodesian gold company, and the recent registration in England of a new company for the acquisition and working of the Killarney-Hibernia and other claims in the Filabusi district has created much interest in mining circles, says the *Bulawayo Chronicle*. The closing down of the Nelly Mine, Insiza, and its re-opening by Mr. F. D. Roscoe with such conspicuous success was a notable illustration of the many instances in Rhodesia of the want of faith and persistency manifested by some of the earlier gold companies. The Nelly Mine produced many thousands in gold while in Mr. Roscoe's hands, and his success was so gratifying that he looked around for bigger fields to conquer. The Killarney-Hibernia, also moribund mines, were taken over by Mr. Roscoe in 1918 and since then, almost unknown and unrecognised, he has been carrying out steady development, often amounting to 500 feet per month, meanwhile maintaining a regular gold output. After negotiations extending over several months he has now concluded a deal with a South Wales financial group for the transfer of the following claims: Killarney, 5 blocks; Hibernia, 3; Betty, 1; Umvoti, 1; Fortuna, 1; Udick, 1; in all 14 blocks of 10 claims each. A large sum in cash is provided for, but Mr. Roscoe will retain a big interest in the company, and as he owns other mining properties—including the Nelly—he will probably remain in Rhodesia and continue to interest himself in the mining industry of the country. The company, which has been registered in England, takes over the group of mines on July 31. On the Hibernia Mine winzes are now going down on the 5th level in rich ore. On the Umvoti the main shaft has been carried down to the 3rd level, with driving east and west. The opening up of the Betty claims, which are an extension of the Killarney, proves that reef for a strike of 6,000 feet. The plant consists of 15 stamps, supplemented by a cyanide plant. Power is supplied by two suction-gas engines of 150 h.p. and 75 h.p. for the mill, crusher, compressor and large electric plant; the latter for the lighting of the mine and surface works and buildings, and also for driving the underground pumps. The mine is equipped with the most modern appliances for cheap mining and there are steel headgears on both the Killarney and Hibernia. The mine buildings comprise mill, engineering shops, stores, native hospital, offices, etc. All the white employees live in brick-built houses, fitted with electric light and water service.

RHODESIAN RAILWAY TRAFFIC.

The *Bulletin* issued by the General Manager of the Beira and Mashonaland and Rhodesian Railways shows the result of the working for the first six months of the current financial year (down to March 31 last). It is a record of decreased revenue and for the most part of smaller traffic. The total earnings were £1,420,696, or £67,702 less than for the corresponding period a year earlier. On the other hand, the cost of operating the railways (including provision for reserve for renewals of railway stock and permanent way) was cut down to £996,548, a saving of £58,062 on the six months. Coal and coke traffic (194,891 tons) showed a fall of 4,911 tons, the drop being more evident towards the end of the period. Chrome ore had a disastrous fall from 37,667 tons a year earlier to 6,672 tons, and asbestos from 10,527 to 3,527. Copper and lead, however, showed increases, from 11,934 to 21,072 and from 8,624 to 10,876 tons respectively.

THE RHODESIAN MINERAL OUTPUT.

The summary of mineral production for Rhodesia in May is as follows: Gold, 53,920·41 fine oz., value £273,562 (includes £45,318 gold premiums); silver, 15,716·85 fine oz., value £1,775 ;coal (raised 37,820 tons), sales value £11,684; coal (used for coke and bricks), value £5,184; copper (blister), 288·96 tons, value £17,338; chrome ore, 5,503·38 tons, value £18,278; asbestos, 828·07 tons, value £19,012; arsenic, 59·30 tons, value £1,347; mica, 7 tons 1,899 lb., value £1,987; diamonds, 15·75 carats, value £59; a total value of £350,226.

ZAMBESI MINERALS.

The recently formed "Société Minière et Géologique du Zambèze," generally known as the Minière Zambézienne, with headquarters in Brussels, is now busily engaged in exploiting its large minéral concession in Portuguese Zambesia. In regard to the famous "silver mines" of Chicova, the company is in possession of the only rights to prospect in that locality and one of the company's engineers, Mr. Malycheff, is just prospecting this area. In regard to the gold mines around Chifumbazi, Machinga and Missale, the Minière Zambézienne has the same rights and one of its engineers, Mr. de Leener, is finishing the survey of that region.

SHAMVA MINES' RESULTS.

The feature of the report of the Shamva Mines for last year is the indication that the maintenance of the dividend rate at the 1920 level of 30 per cent. entailed a somewhat substantial draft upon the carry forward, the latter at [illegible] being [illegible] less. Owing to the labour trouble at the early part of the year the tonnage crushed fell slightly short of the total for the preceding period, but the factor mainly responsible for the decline in profits was, of course, the shrinkage in the gold premium. Virtually, the cost ratio remained as before, the small saving shown being really due to a reduction in the development redemption allowance. The consulting engineer observes that, while the gold premium has lately been falling more rapidly than working costs, stores should be obtainable at very considerable reductions, while white wages were cut as from the 1st April. On the development side an interesting point is the practical completion of the first level of the Cymric property, where two additional ore chutes have been proved by a total length of 42 feet, value 3·8 dwt. Stoping in that area is expected to commence this year. As already announced and commented upon in our columns, the ore reserve estimate has been extended by the inclusion of a large tonnage of low-grade but payable material, and the point is stressed that "the Shamva is essentially a low grade mine of vast dimensions.

The annual report states that development and prospecting operations have continued to disclose a large tonnage of payable ore, and in view of increased capacity of plant and of impossibility in practice of following exactly in stoping operations the contour of the ore bodies as indicated by development, the stopes thus yielding a considerable tonnage of ore of low but still profitable grade, it was decided, in order to approximate more closely to the position resulting from the inclusion of such ore to recalculate the ore reserves. At 31st December, 1920, these were estimated at 1,981,250 tons of an average value of 4·1 dwt. Adding total tonnage brought in during the year, namely, 1,415,272 tons of an average value of about 2·5 dwt., and deducting tonnage crushed during the year, namely, 595,500 tons of an average value of about 3·36 dwt., estimated ore reserves at 31st December, 1921, are shown to have been 2,801,022 tons of an average value of 3·5 dwt. Owing to the strike and other causes mill ran for 307·41 days only; 595,500 tons were crushed, producing 87,115 oz. gold, giving a total net recovery value of £457,087; profit realised, including sundry revenue, but deducting London expenses, being £155,107. Owing to the inclusion in ore reserves of a large tonnage developed at low cost a reduction of 3d. per ton is shown in working costs under head of development, total working costs being 122·50d. per ton, against 125·18d. in 1920.

* * *

THE POSITION OF THE GAIKA.

A lengthy circular is issued by the new Board of the Gaika Gold Mining Company, Ltd., giving copious extracts from a report on the property by Mr. A. M. Mackilligin, M.I.M.M., who has now been appointed manager to carry out his own recommendations. The new chairman, Mr. Stanley Edwards, has just returned from a visit to the mine and will make a full statement at the annual meeting, which it is hoped to hold in September. The Board's circular states, *inter alia:* "The Chilian mill cleans up every six weeks; consequently it is not practicable to issue monthly outputs without considerable variation, unless the objectionable practice of holding a reserve of unrealised product in the mine safe is resorted to, but there should be little variation in a quarter's returns, as it would include two clean-ups. Therefore, your directors intend in future only to issue quarterly returns of mine output." We are inclined to think it just as "objectionable" only to publish returns quarterly as to even up monthly results by the utilisation of the gold reserve. The circular proceeds: "Shareholders will doubtless view with concern the serious reduction in ore disclosed in Mr. Mackilligin's report, also the unsatisfactory stoping position. Approval of the obtaining of the electrical hoist to relieve the position of the south shaft was given immediately Mr. Mackilligin pointed it out, and the chairman left the matter of reducing the monthly tonnage for the present to Mr. Mackilligin's discretion. If it proves necessary, we hope that the reduction will only be temporary; and as regards the ore position, we think that we can reasonably expect the active development programme during the next twelve months to add materially to our resources." At 30th June, 1921, the then consulting engineers estimated the ore reserves at 73,000 tons averaging 13·2 dwt. per ton, but made the following reservations: "Ten per cent. of the total is, however, represented by pillars which must not be mined until all other sections are depleted. This year we have included some blocks of low-grade but profitable ore, which will repay treatment." Mr. Mackilligin estimates the "probable ore" at 30th April last at 50,016 tons averaging 13·8 dwt. per ton (including in pillars and, therefore, not immediately available 16,157 tons, averaging 12·7 dwt.).

INVESTORS' DIARY.

Forthcoming Company Meetings.

(a) Annual general meeting; (s) special or extraordinary general meeting.

Meetings will be held in Johannesburg unless otherwise stated.

Aug. 30.—Diamond Fields of Africa Exploring Co., Ltd. (a), 3 p.m.

Sept. 20.—Swaziland Tin, Ltd. (a), 12 noon.

Sept. 21.—Transvaal Gold Mining Estates.

Sept. 29.—Simmer and Jack Prop. Mines (a), 11.30 a.m.

Nov. 17.—Sub Nigel (a), 11.30 a.m.

RAND WATER BOARD.

NOTICE No. 117.

VAAL RIVER SCHEME—CONTRACT No. 226.

TENDERS ARE INVITED for the erection of Filter House, Offices and Concrete Filter Tanks at the Board's Main Pumping Station, Vereeniging.

For particulars apply at the Office of the CHIEF ENGINEER, RAND WATER BOARD, where copies of the Contract Documents may be obtained **on or after FRIDAY, the 28th JULY, 1922,** upon a deposit of £5 per copy, which amount will be returned on receipt of the documents and a bona fide tender.

Tenders are to be accompanied by a certified cheque or cash deposit, **for 5 per cent. of the amount of the tender,** which amount the Board may retain if the tenderer withdraws his offer within six weeks from the date on which tenders are opened.

No tender will be considered unless accompanied by the deposit referred to in the preceding paragraph.

The Board is not bound to accept the lowest or any tender.

All tenders are to be deposited at the Office of the Secretary, Rand Water Board, 2nd Floor, Central House, or P.O. Box 1703, Johannesburg, before **12 noon on THURSDAY, the 10th AUGUST, 1922.**

W. INGHAM,
M.Inst.C.E., M.I.Mech.E.,
Chief Engineer.

25th July, 1922.

TRADE AND INDUSTRIES SECTION.

Week in the Mining Material and Engineering Trades.

OPTIMISM OVERRIDES PRESENT BUSINESS DULLNESS—IRON AND STEEL—AMERICAN NOTES—TIMBER AND BUILDING MATERIALS—REDUCTIONS IN EXPLOSIVES—ELECTRICAL GOODS—INTER-IMPERIAL TRADE—UNION AND RHODESIAN PROVISIONAL AGREEMENT—BRITISH TRADE RETURNS FOR JUNE—OIL—COAL—ELECTRIC AND WIRELESS—WORLD'S SHIPBUILDING—FINANCIAL—METAL QUOTATIONS.

General.

This week again the volume of business transacted on the Commercial Exchange and elsewhere has been exceedingly small and of a disappointing character. All predictions and expectations of a fairly busy time just now have signally failed to materialise, and the community is at a loss to account satisfactorily for the present inertia in business. It is now four months since the industry resumed working after the paralysis of the first quarter of the year's labour upheaval. The mines have since April last gradually been winning towards normal conditions, and last month's returns show an increase in profits—small perhaps, but still an increase—which July results are bound to enhance. Still, in spite of this satisfactory position, the commercial community is at the moment in a state of inactivity and stagnation worse even than that immediately after the resumption of mining operations. It is exceedingly difficult to account for the present depression, and no one seems to be able to explain satisfactorily the situation which undoubtedly exists. A leading commercial man this week likened the position to that of one having undergone a very serious operation successfully, which yet entailed a very long period of convalescence. We had just gone through, he said, a very trying time, a time more serious and trying than we had ever experienced before, and were just now building up our strength and recovering slowly, as all convalescents do, from the terrible affliction we had recently undergone. The shock had been a very severe one in every department of our civic life, and had undoubtedly, as was Johannesburg's wont, been too hastily minimised. We were now, contrary to opinions freely expressed in April and May, feeling, perhaps rightly, taking all circumstances into due consideration, the natural results of such an industrial subversion. But, taking a wider view of things (in the taking of which, by the way, this industrialist has built up both a big business and reputation), he still maintained that, despite present conditions, everything pointed to a time when we should really have good, sound, solid business conditions. He could not look to a single phase of the Union's present and future without seeing a silver (golden) lining all round. The Chamber of Mines' latest statement regarding working costs and the importance of low grade tonnage, which would necessarily be influenced thereby, was of vital interest to the commercial community and presaged good things ahead for all of us. The mines were daily getting back to normal, and would within a very short time arrive at that desirable goal, and with the full complement of native labour aimed at by the Chamber, with its natural corollary of absorption of white labour to the fullest extent, the gold mining industry was bound to go forward eventually by leaps and bounds. The Chamber's reference to the possibility of resuscitating even those mines which under past conditions had been forced to close down and to propositions east and west of Johannesburg where, under given conditions, millions of tons of ore could be worked at a profit, thus prolonging the life of the industry, increasing white employment, and enlarging commercial business activities, was of the utmost importance to the Rand. What with this magnificent prospect (he thought it was eventually a certainty) and the Government doing what it contemplated in the shape of railway and harbour extensions, we had, he said, every reason to look forward to a very much improved state of affairs in the Union very shortly. He thought that, despite the undoubted dullness recently prevailing, we were now heading to a very good time, and that within a few months the commercial community would be reaping a tardy but bountiful harvest. A huge amount of money is going to be spent in the country. A very satisfactory feature, he said, was that the Union could obtain whatever money she needed and on very favourable terms. Land banks are being reinforced to help the farmers, and irrigation works, etc., and Government railways are going to be extended as fast as they can be. The Municipality, with its million loan, is also going to do a lot towards ameliorating the present position and give employment to a considerable number of out-of-works, so that, despite the fact that we are at present certainly feeling very bad times, the future is full of promise for the commercial community. Patience, one of the most difficult of the virtues, only is required. Prices of materials, iron, steel and timber remain much about the same, owing to the fact that at the moment there is no great demand.

Iron and Steel.

Business generally this week has been very much duller than during the earlier part of the month. Inquiries on the Commercial Exchange have been exceedingly quiet and seem to be dwindling instead of getting better, for which position there seems to be no accounting. It is, however, stated that the mines are deliberately holding back purchasing, but for what reason no one apparently can say. This policy appears to be bad, because the tendency to-day is for prices to rise and not recede. Latest cables show that prices of all English material are increasing, and the only hope of a reduction therein locally is for coal rates to be reduced, of which at present there seems no likelihood. At the present moment everyone who has anything to do with trading with the mines is at a loss to understand their present policy in regard to purchases at to-day's prices, as it is well known that their stocks at the moment are the lowest they have ever been. However, the general feeling is that early next month business will assume a more normal level and increase gradually in volume. Certain lines of steel plates still show a shortage, and the keen demand for mild steel shafting also has reduced this material, and prices show a firming tendency. This applies also to certain sizes in bolts and nuts and brass and copper sheets.

Latest quotations.—Dunswart iron, 18s. to 23s. per 100 lb.. Mines: Merchants' prices, 22s. to 28s. Union Steel Corporation, Limited, 19s. to 22s. 6d. Mines: Merchants' prices, 23s. to 28s. Imported iron and steel, flats, rounds and squares, from 25s. 6d. to 35s.; channels and joists, 25s. to 28s.; imported angles, 27s. to 31s. 6d.; tee iron, 27s. 6d.; shafting, ⅜ in. down to 3-16 in., 7½d. to 9d. lb. ⅝ to 1½ in., 6½d.; 1¾ in. to 6 in., 4½d.; steel plates, 1-16, ⅛, 3-16, 18s. 9d. to 21s. 6d.; 10 x 5 and larger, 25s.; ¼ to ¾, 23s. 6d.; spring steel, 7d. to 8½d. lb.; bolts and nuts, hexagon, ⅜, 7 5-16d. lb.; ½ in., ⅝ and ¾, 33s. 6d. to 47s. 6d. per 100 lb.; hexagon nuts, ⅜, 8½d.; ½ in., ⅝ and ¾, 7½d.; fish plate bolts and nuts, ⅜ in., 6d. lb.; ½ in, 4d. to 4¼d.; ⅝ in. and ¾ in., 3¾d.; dog spikes, 32s. 6d. per 100 lb.; rivets, ¼ in., 6 5-16d.; ⅜ in., 5d.; ½ in and ⅝ in., 37s.

"CAMEL HAIR" BELTING

NOTICE

TO BELTING MANUFACTURERS, DEALERS, AND PURCHASERS.

NOTICE IS HEREBY GIVEN that the term "Camel Hair" applied to Belting is the Trade Name and Registered Trade Mark of F. REDDAWAY & CO., LIMITED. All persons selling or offering for sale Belting as "Camel Hair Belting" which is not of the manufacture of Messrs. F. Reddaway & Co., Limited, will be prosecuted, and the public are warned against purchasing spurious Belting sold under this name or any imitation of the Trade Names or Trade Marks of F. Reddaway & Co., Limited. The "Camel Hair," "Camel" Brand, and "Camel" Belting, can be obtained only from Messrs. F. Reddaway & Co., Limited, or their Representatives.

All Communications to be addressed to:—

BARTLE & COMPANY, LTD.,
LOVEDAY HOUSE,
P.O. BOX 2466. PHONE 3553.
JOHANNESBURG.

STANDARD BANK

OF SOUTH AFRICA,
LIMITED.

(With which is incorporated the African Banking Corporation, Ltd.)

Established 1862.

Authorised Capital - - -	£10,000,000
Subscribed Capital - - - -	£8,916,660
Paid-up Capital - - - - -	£2,229,165
Reserve Fund - - - - -	£2,893,335

GENERAL BANKING BUSINESS transacted at all Branches and Agencies; DEPOSIT and CURRENT ACCOUNTS opened; PURCHASE and SALE of INVESTMENT SECURITIES effected, etc.

SAVINGS BANK ACCOUNTS opened on terms, particulars of which may be obtained on application.

The BANK is in close touch with TRADE and INDUSTRIAL CONDITIONS, both local and overseas, and special attention is given to COMMERCIAL ENQUIRIES from customers.

EXECUTOR and TRUSTEE business undertaken.

Over 380 Branches and Agencies in Africa.

Agents and Correspondents throughout the World.

USE

"PORPOISE"

BRAND

ANTIFRICTION GREASE

Used for years by the majority of Mines all over South Africa.

Manufactured by

South African Lubricants & Chemical Works, Ltd.,
DURBAN & JOHANNESBURG.
Phone 1618, Johannesburg Branch Office.

6d. to 40s per 100 lb.; ⅜ in., 50s.; brass rods, ¼ in., 1s. 3d.; ⅜ in., 1s. 6d.; ½ in., 1s.; hexagon brass rods, 1d. lb extra; copper rods, ⅜ in., 1s. 9d.; ½ in., 1s. 10d.; ⅝ and upwards, 1s. 9d. lb.; tool steel, 2s. 11d. to 3s. 3d.; brass sheets, 1s. 10d. to 2s. lb.; copper sheets, ¼ in. to 18 gauge, 1s 10d. lb.; 20 gauge, 1s. 11d.; 22 gauge to 28 gauge, 2s. lb.; firebox copper, 2s. 1d. lb.; copper tubes, ¼ in., 3s.; ⅜ to ⅝ in., 2s. 4d.; ¾ to 1½ in., from 2s. to 2s. 2d. lb.; phosphor tin, 2s. 7d.; ingot tin (Lamb & Flag), 1s. 9d. lb.; ingot lead £28 per ton: drill steel, 5½d.; hollow, 7d. to 8d.; 1¼ in., 6½d. to 8d.; wire nails, 30s. to 35s.; shovels, 27s. 6d. to 46s. 6d. doz.; wheelbarrows, 40s.; picks, 35s. to 40s.; pick handles, 26s. to 30s.; hammer handles, 14 in., 4s. 10d. to 5s.; 18 in., 7s.; 24 in., 8s. 6d. to 10s. 6d.; 30 in., 15s. to 18s.; 36 in., 30s.; piping, ¾ in., black, 4¾d.; 1 in., 5¾d.; 2 in., 1s. 1d.; galvanised, ¾ in., 5d.; 1 in., 7¾d.; 2 in, 1s. 7d.; ¾ in. steam, 5¾d.; 1 in., 8d.; 2 in., 1s. 6d.; barbed wire, "Shorthorn," 69 lb., 13⅜ gauge, 19s. 6d. to 21s. per coil; plain galvanised fencing wires, No. 8 gauge, 100 lb. coils, 21s. 6d. per coil; No. 10 gauge, 100 lb. coils, 24s. 6d. per coil; No. 12 gauge, 100 lb. coils, 26s. 6d. per coil; bulb tee fencing standards, 14 lb., 19s. 6d. per dozen; 12 lb., 23s. 6d. per dozen; black baling wire, 14 gauge, 19s. per coil, 100 lb.; 12 gauge barbed wire, 22s. per coil, 96 lb.; plain wire, No. 8 galvanised, 21s. per coil, 100 lb.; fencing standards, 21s. for 12's and 24s. for 11's; droppers, 40s. per 100; screening, 3s. to 9s. 6d. per square yard; cyanide, 1s. 6d.; zinc shavings, 1s. per lb.

Engineering Shops.

There is little new to report in regard to these. Business may be said to be fairly good, but a long way behind the standard which it was generally thought would obtain at this time

Second-hand Machinery.

Business on the whole is not too good at present; the mines are holding their hand and only a few inquiries are coming forward from outside districts. Second-hand boilers and engines are in fair demand, but the supply is rather limited. Outside inquiries are rather good, leading to the hope that shortly very good business will be done.

Tenders are invited by the Department of Irrigation, Pretoria, by the 18th October, for 6¼ in. percussion drilling bits, 6¼ in. percussion drilling reamers, rope sockets for percussion tools system, under reamer for percussion tools system, Morahan sand pumps for 6¼ in. boreholes, 8-ton traversing jacks, 200 gallon tanks, ⅜ in. wire sand line.

American Notes.

From New York it is announced that continued indications of industrial improvement, signs of a renewed easing in money rates, and diverse testimony as to crop conditions are the features in business and finance. Commodity prices still show a firmer tone, and the labour situation shows no decided change. Altogether the picture continues to be one of gradual but fairly steady recovery from depression —a recovery, in fact, which on the whole exceeds expectations entertained earlier in the year.

From the industrial field recent reports show that the steel plants are still operating, at rates which compare favourably with full capacity operations before the war—even if those rates correspond to only 75 per cent. of present capacity. Steel prices are firm, and most of the companies appear to be making modest profits.

Automobile production during May also exceeded all previous records, while the steel companies report increased demand from manufacturers of agricultural implements Orders for railroad equipment continue to be placed in satisfactory volumes.

A relaxation of money rates at New York suggests that the tightening occasioned by the transactions centring around June 1 has passed, and that there is no change as yet in the general money situation.

Reductions in wages for additional classes of workers by the Railroad Labour Board have called forth protests from labour leaders. It has been indicated, however, that railway executives do not take strike threats seriously, and the view gains ground that the roads will be able to operate successfully under the new rate and wage schedules.

The coal strike situation has stiffened the prices of steel products in addition to those of coal and coke.

According to latest reports, the coal strike is assuming graver proportions, troops having been called out for duty on the coalfields

Timber and Building Materials.

There is very little change to report in the timber trade; business is fair and has shown a slight improvement during the past week. Prices from the Baltic remain very firm, locally they show no change; stocks are getting low, particularly 3 x 9 deals. New consignments are expected August-September.

The building trade is moving somewhat; there is presently a fair demand for material and labour. In regard to bricks, a prominent agent said these are now being carted "hot" from the kilns. Men in the building trade are presently not too plentiful, plasterers in especial are very scarce, and all artisans are busy. Prospects are very hopeful.

Timber prices.—3 x 9 deals, up to 18 teens 1s., over 18 teens, 1s. 1d.; scantlings, 10½d.; beaver boards, 4¼d. to 4½d.; floorings, 6d. to 6¼d.; ceilings, 4¼d. to 4½d.; Oregon, 5s. 6d. a cube; pitch pine, 7s. 6d. to 8s.; corrugated iron, 7¾d. to 8⅞d. Furniture timber: Burmah teak, 13s. per cube at coast; American oak, 1 in., 10½d.; 1½ in., 11d.; 2 in., 1s. at coast; Japanese oak, 11½d. at coast; West African mahogany, 1 in. to 4 in. thick, 27s. to 28s. per cube, at coast; Rhodesian mahogany, 9s. per cubic foot at mills; Honduras mahogany, 30s. per cubic foot; American yellow pine, 1s. 4d. per foot of 1 x 12 here; American pine shelving, 10d. per ft.; 3-ply wood, 3 m.m. up to 5 m.m., alder and birch, 4d. to 6½d. per sq. ft.; oak and teak, 3-ply, 10d. per sq. ft. Prices for bricks are: Klompje bricks, 25s. per 100 at works; fire-bricks, £10 per 1,000 at works; mixed, 70s.; wire-cuts, £4 10s. to £5; and £5 for pressed per 1,000, at kilns; columns from 20s. to 30s., according to size; roofing tiles, Marseillés, £25 per 1,000 at the works; chimney pots, 12 in., 7s. 6d.; 15 in., 9s.; 18 in., 10s. 6d.; dry red oxide, 16s. per 100 lbs.; white lime, 7s.; blue plaster lime, 5s. 3d.; blue lime, 4s. 3d.; cement, 10s. a bag; damp course and roofing, 36s., 54s. for 1 to 3-ply.

Second-hand Iron and Timber.

Business still remains very quiet in the second-hand iron and timber yards. Inquiries are fairly plentiful, but orders are few and far between; people, one large dealer said, are open to buy, but generally not on a cash basis, and the opening of accounts, previously so much in vogue, is now fought shy of by dealers at the moment; we have, he said, very little butter on our bread and there is absolutely no margin now for bad debts. Stocks are daily becoming scarcer. Prices are 6d. for iron and 8d. for timber, with, however, a downward tendency.

Explosives.

The British South African Explosives Co., Ltd., announce that from the 1st inst. prices of explosives have been reduced from 2s. to 4s. a case, according to grade, which means, of course, a considerable item to the mines' cost bill. The mines, the courteous secretary of the company stated, had this month taken quantities of explosives equalling those purchased in pre-strike times.

Electrical Goods.

Trading in electrical wares shows little alteration from our last week's report; town and country business is fair, with occasionally a good order from parts outside the Union.

yet that influx of business which was generally expected about this time has failed to materialise. Prices locally remain unchanged, but Home quotations are undoubtedly firming up and are likely to increase in the near future. Things in Germany electrically are about 15 per cent. higher than previously and likely to go higher. People, said a big importer, are biting, but do not seem to get farther. Country orders are small compared with inquiries made; everybody seems to imagine that we have not yet come to the end of our troubles. Stocks are very fair, but orders from Britain are not being executed with promptitude. A large importer said he had had an order on hand in England for eight months which had not yet been executed, which confirmed his information that Britain had at the moment her hands full with orders, which the present trouble in Germany was increasing, and still he said there was so much unemployment in the Old Country! This important dealer, to illustrate the bad times through which we are passing, stated that an outside mine, which had owed him an account for over twelve months, had, on being pressed at last for a settlement begged for a further month's respite.

Inter-Imperial Trade.

At a luncheon at the House of Commons given by the Empire Parliamentary Association, Mr. Bonar Law emphasised the necessity of the trade of the Dominions to Britain. Britain's first duty, he said, was to develop her own heritage, and, whilst not disregarding the fate of Europe with indifference, to foster relations between the Dominions and the Mother Country.

Lord Leverhulme, at the Niger Company's meeting, agreed with Mr. Bonar Law that Britain was unable to wait for the settlement of affairs in Europe, and must build up trade with the Colonies.

In this connection Colonel Amery (Parliamentary Secretary to the Admiralty), at a meeting of the Association of British Chambers of Commerce, said Britain's export trade was faced with crippled and stagnant markets overseas. He advocated concentration on Empire development rather than on side-shows: the trade of Europe, he said, was a side-show compared with the Empire's.

Empire Development Union.

With the object of stimulating further development of trade within the Empire an influential association has been formed to counteract the effects of the collapse of British exports to foreign countries. Steps are being taken to ensure the best available means of securing the complementary development of the resources of the Empire on lines of mutual helpfulness.

Union and Rhodesia Provisional Agreement.

Regarding the negotiations between General Smuts and Mr. Malcolm, British opinion concurs that the terms offered are very fair to the Chartered Company. A special meeting of the Chartered Company was convened for yesterday to confirm the arrangement arrived at with the Premier of the Union. This arrangement provides that in return for the surrender of its rights in unalienated land, railways, public buildings, etc., the Chartered Company shall receive the sum of £6,836,500, retaining, however, the whole of its mineral and commercial rights and interests and the whole of its investments other than railways. The whole agreement is conditional on Southern Rhodesia actually forming part of the Union not later than March 31, 1924.

The publication of the terms of General Smuts' conditional offer to the Chartered Company has led to huge dealings on the Stock Exchange. It is stated that fully 100,000 Chartereds have changed hands at prices ranging from 15s. 9d. down to 15s.

British Trade Returns for June.

The board of Trade returns for June show that the total value of imports was £84,298,000, being a decrease of £3,873,000 compared with the corresponding period of last year. The exports totalled £52,145,000, an increase of £13,993,000 compared with June, 1921.

Oil.

The Greek Government, it is announced, has granted the Anglo-Persian Oil Company rights in connection with petroleum throughout Macedonia.

Coal.

As a result of the American coal strike, orders for 500,000 tons of coal have been placed in England and Wales. These orders are confidently expected to increase. As a result the best Admiralty coal has risen 6d. per ton at Cardiff. The American Government, it is stated, is considering a comprehensive programme for the importation of coal, chiefly from England, as a means of relieving the shortage caused by the strike.

Electric Railway to Pretoria.

This project, which has been to the fore in recent years, is again attracting attention, and there can be little doubt that the time is not far distant when electrical communication with the capital will supersede the present slow system just as the coach made way for the present railway.

Maritzburg Electrical Railway.

The Government, it is stated, has decided to proceed with the erection of locomotive workshops at Maritzburg in connection with the electrical working of the railway, at a cost of £20,000.

Union Wireless Service.

In the Assembly last week the Premier stated that the British Postmaster-General had abandoned the chain system, and that three proposals were now being considered by the Union Government. The Marconi Company's proposal seems to find most favour, viz., to form a South African company, with a capital of £500,000, of which £400,000 would be devoted to building a great central wireless station of the vacuum tube type, similar to that built in Australia, powerful enough to speak to every continent, at a guaranteed minimum rate. General Smuts stated there was no hurry, that the Government was unpledged, but that during the recess some action might have to be taken in respect of this important matter.

World's Shipbuilding.

Lloyd's Register shows that the German mercantile marine has more than doubled itself during the year ended June 30. Possessing a year ago a tonnage of 652,000, she now has 1,783,000. The increase is attributable partly to the transfer to the German flag of vessels allocated to other countries. The increase is the largest shown by any country in the period. The present mercantile marine standard shows Great Britain with a tonnage of 19,000,000, the United States second with 12,000,000, and Germany a long way behind her 1914 record of 3,315,000 tons.

Johannesburg's New Loan.

This is now quoted at 1 per cent. premium.

The Durban Town Council has been authorised to borrow a sum not exceeding £650,000 for public improvements, of which £35,000 has been allotted to public improvements, £200,000 to electric light and power, and £100,000 to tramways.

S.A. Reserve Bank.

The statement of the Bank for the week ended July 22 shows ratio of cash reserves to liabilities to the public at 79·6 per cent.

Metal Quotations.

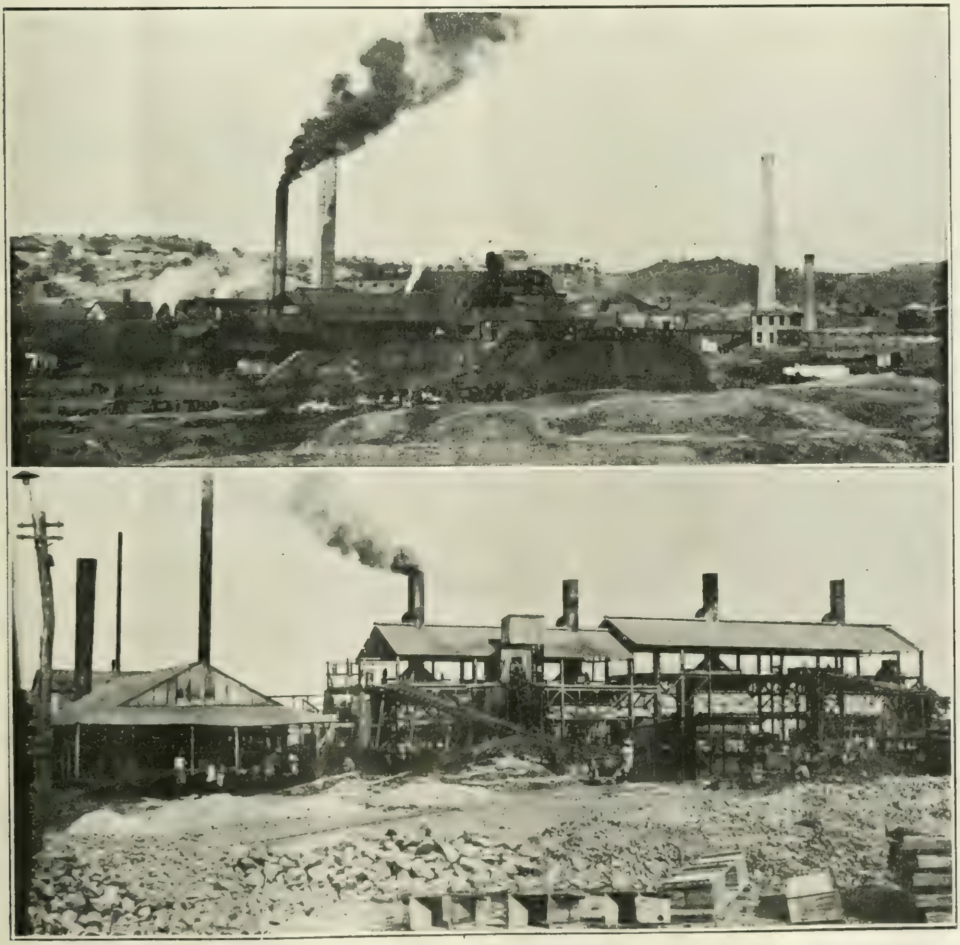
Metal market quotations, London, July 24: Standard copper, £63 10s. cash, £63 17s. 6d. forward; electrolytic copper, £70 10s. cash, £71 10s. forward; standard tin, £158 cash, £158 2s. 6d. forward; foreign lead, £25 12s. 6d. cash, £24 2s. 6d. forward; quicksilver, £11 10s.; bar silver, 35½d.; bar gold, 92s. 5d. per oz.

West Springs Development—New Lease of Life for E.R.P.M.
Rhodesian Railways and the Union—The Mining Outlook.

The South African
Mining & Engineering Journal
THE ONLY MINING AND ENGINEERING WEEKLY PUBLISHED IN AFRICA.
Established 1891.

Vol XXXIII., Part I JOHANNESBURG, TRANSVAAL, SATURDAY, AUGUST 5, 1922 No. 1610

Two Great Rhodesian Industries.



Although the mineral rights of the Chartered Company are not being acquired by the Union, the mines of the territory will prove a big factor in the trade and transport of the prospective new province of the Union. The above picture shows: (1) the Great Wankie Coal Mines, (2) the Broken Hill Smelting Plant.

SIEMENS BROTHERS
& CO., LIMITED

MANUFACTURERS OF

CABLES

AERIAL, UNDERGROUND, SUBMARINE.
Paper Insulated. Rubber Insulated.
Gutta-Percha Insulated.
Lead Covered. Armoured.

WIRES

Rubber Covered. Gutta-Percha Covered.
Cotton Covered. Silk Covered.
Asbestos Covered. Enamelled.
Motor Car Leads.

CABLE ACCESSORIES

Joint Boxes. Connection Boxes.
Service Boxes.
Insulating Compounds. Tapes.

TELEPHONES

Manual Exchanges. Automatic Exchanges.
Intercommunication Sets.
Loud-speaking Telephones. Portable Telephones.
Mining Telephones.

TELEGRAPHS

Inkers. Sounders. Relays
Keys, &c. Station Sets.
Fast-speed Apparatus.

LINE MATERIAL

Tubular Poles. Lattice Poles.
Pole Structures.
Arms. Brackets. Insulators.

SIGNALLING APPARATUS

For RAILWAYS—
(Siemens's All-Electric Power System)
and for
SHIPS, MINES, POWER STATIONS.

PRIMARY CELLS

Fluid and Dry.

Representatives in South Africa:

A. J. G. SIMPSON, A.M.I.E.E.
African Life Buildings, 85, St. George's St.,
CAPE TOWN.
P.O. Box 239, Cape Town. Telephone 1202 Central.

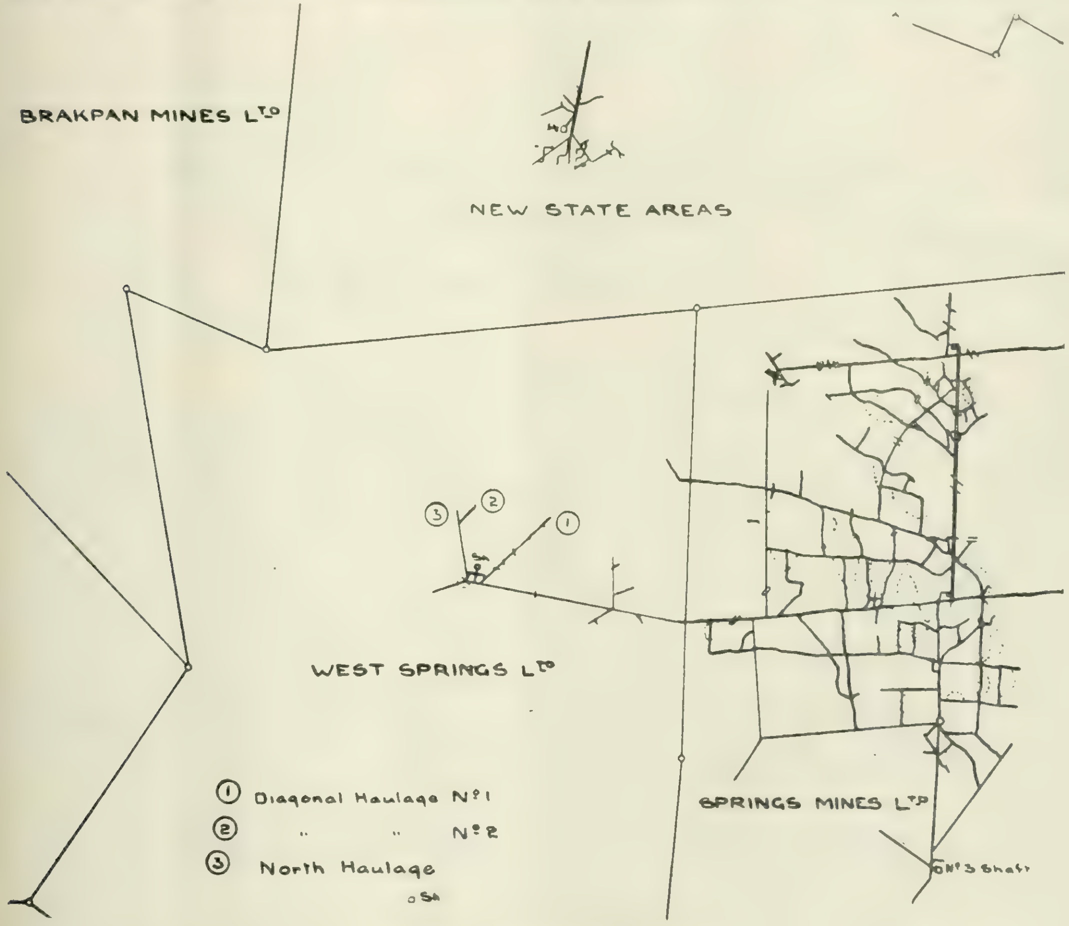
G. H. B. BERNARD, A.M.I.E.E.
9-10, Cotts Buildings, Rissik and Fox Sts.,
JOHANNESBURG.
P. O. Box 7404, Johannesburg. Telephone 408 Central.

Telegrams : "SIEMENS."

The West Springs Improving Development.

JULY FIGURES MAINTAIN ENCOURAGING VALUES—OUTLOOK BRIGHTER—NORTH-EASTERN AREA MAKING PAYABLE MINE.

The encouraging results shown in the quarterly report for the Springs West, issued this week, have been maintained during the month of July. The better figures shown in the No. 1 and No. 2 diagonal haulages, and in the north haulage have put quite a different complexion on affairs, and point to the mine turning out highly payable in its north-east section at least. A glance at the plan reproduced herewith will show the position of the haulages in question, and serve better than anything else to illustrate how the mine is opening up. The values and widths of reef in these haulages seem to point to the fact that the development is now entering the broad ore shoots characteristic of the neighbouring Brakpan and New State Mines and that a payable area equal to, say, that of the Modder Deep, may be opened in the northern section of the property, quite irrespective of what the southern may produce.



Latest Plan of West Springs Development.

Some Recent Figures.

In addition to the official figures for the June quarter, which are put on record below, we have obtained the figures up to the end of the month of July, and these confirm the encouraging features of the quarterly report. The No. 1 diagonal haulage has been in payable ore for the last 1,024 feet, the average for the whole distance being 10.7 dwts. over 44 inches, which is equivalent to 472 inch-dwts. The last 315 feet of this stretch show reef of great width and good value, the average for this distance being 10 dwts. over 74 inches or 740 inch-dwts. The No. 2 diagonal haulage is just getting into payable ore, the last 275 feet averaging 7.5 dwts. over 47 inches, equal to 354 inch-dwts. The north haulage is also getting into payable ore, the last 210 feet averaging 8 dwts. over 36 inches, equal to 289 inch-dwts.

These figures, it should be noted, are up to the end of July and include those given in the quarterly report.

The details of the quarter's development together with a summary of the work so far accomplished, are as follows:

Working Place.	Total Footage.	Footage Reef.	Footage Sampled.	Reef Width. Inches.	Assay Value. Dwt.
North Haulage .	446	446	535	12·3	5·8
Diagonal Haulage	834	590	580	28·2	15·8
No. 2 Diagnl. Haulage	265	265	190	17·1	12·8
N.-E. Haulage, Level 1	365	233	225	12·9	19·0
N.-E. Haulage, Lev. 12	200	200	185	15·5	20·4
East Haulage Rase	267	267	255	21·4	14·3
S.-W. Haulage Rase .	215	215	210	21·8	20·0
S. East Haulage	178	60	60	28·3	4·3
For Quarter .	2,949	2,216	2,240	19·84	14·41
Previously reported .	10,364	5,137	5,015	25·54	6·61
Totals and Averages	13,313	7,353	7,255	23·77	8·61

The report adds:—" With the exception of the footage done in the S. East haulage, the work was accomplished from No. 1 shaft, West Springs. Of the footage sampled during the quarter, 1,055 feet, equivalent to 47.1 per cent., showed payable assays, averaging 18.85 dwts. over 27 inches. Towards the end of the quarter the diagonal haulage entered into a wide body of high grade ore, and the No. 2 diagonal haulage commenced to disclose payable values."

RYLANDS' STEEL WIRE ROPES

MANUFACTURED BY:
RYLANDS BROTHERS, LTD.,
WARRINGTON, ENGLAND.

SOLE REPRESENTATIVES FOR UNION OF SOUTH AFRICA:—
ARMSTRONGS & MAIN, LTD.,
84, Marshall Street,
JOHANNESBURG.
P.O. BOX 5988. 'PHONE 5203.

LARGE STOCKS ON HAND.

SPECIALISTS ..

IN THE MANUFACTURE AND DESIGN OF
STRUCTURAL STEELWORK.

ARMSTRONGS & MAIN, LTD.,
GENERAL AND CONSTRUCTIONAL
.. ENGINEERS, ..
84, Marshall Street,
JOHANNESBURG.

P.O. BOX 5988. TELEPHONE 5203.

A New Lease of Life for the E.R.P.M.

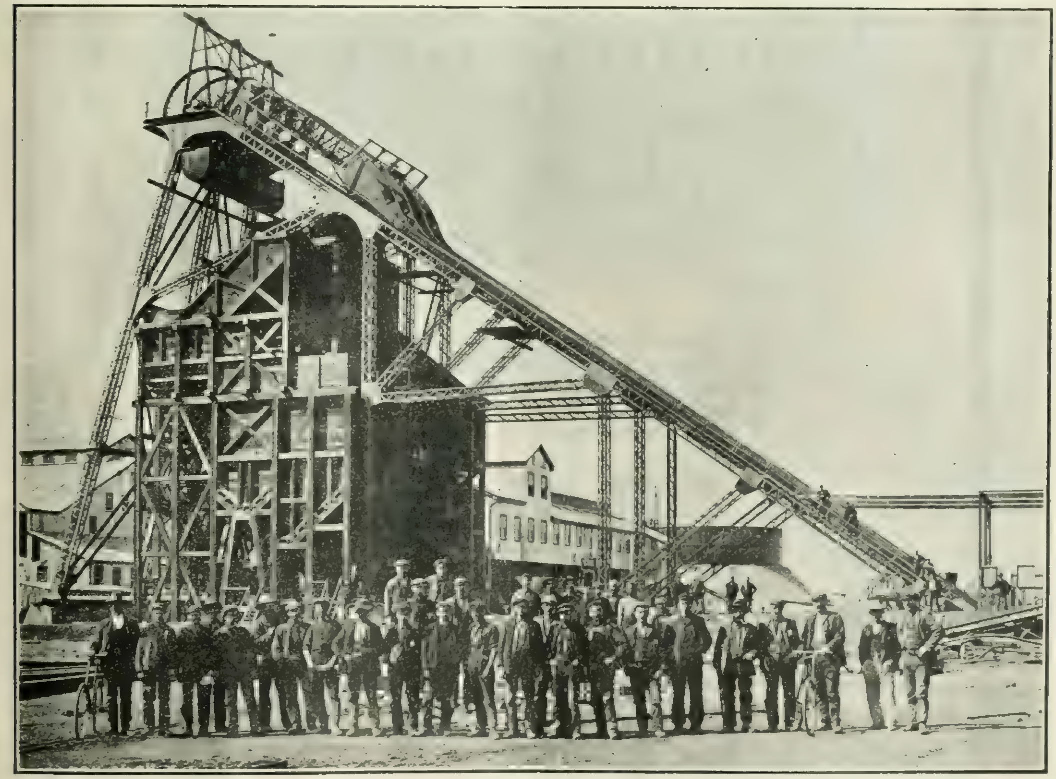
HIGH VALUES IN DRIEFONTEIN AND COMET SECTIONS—A POSSIBLE NEW MINE—BETTER DEVELOPMENT.

From the latest indications it would seem that there may be a new lease of life for the E.R.P.M. The following cable was sent to the London office of the E.R.P.M. on Wednesday:—"High values have lately been disclosed by development operations in the lower workings of Driefontein and Comet Deep sections, but it is too early to make any statement as to permanence." Moreover, the quarterly report for June shows that two-thirds of the sampled development was payable, averaging about 550 inch-dwts.

It may be recalled that the capital of the E.R.P.M. is now £2,514,000, and the property consists of 4,411 claims. The mine has an equipment of 600 stamps and 25 tube mills. It has paid dividends as high as 45 per cent., but these have gradually fallen, until, in 1916, only 2½ per cent. was paid, and there has been no distribution since. There is a 5 per cent. debenture debt, which has been reduced to £620,010 from £1,500,000. The assets at December 31 last were given in the accounts as £868,066, less debenture debt and annuities, but the financial position was maintained practically as in 1920. In 1921 there were crushed 1,506,000 tons for a gold yield of 396,285 oz., and a realisation of £124,818 less than in the previous year. It was the gold premium that saved the company, and the chairman said that, without this, "the prospects of continued operations will not be too attractive." The mine divides itself into the Eastern and Western sections, and it is in the latter that its future lies. The ore reserves at December 3, 1921, were estimated at 1,946,650 tons, value 6·7 dwt., or ·6 dwt. higher than in 1920. No damage was done to the property during the strike, but the mine would have been flooded but for the loyalty of the staff. Not only must costs come down, but the company in any event cannot afford to employ unnecessary whites. It has over 1,000,000 tons available, yielding 4 dwt., which cannot be dealt with under present conditions. Already some advance has been made towards a reduction of working costs.

Six Months' Output.

The value of the mineral output of the Union for the six months ended June 30 was as follows: Gold, 2,461,158·085 fine oz., value £10,454,334; silver, 389,845·044 fine oz., value £59,041; diamonds, 288,020·36 carats, value £998,697; coal, 4,568,576·000 tons, value £1,701,443; copper ore and concentrates, 93·620 tons, value £3,690; tin concentrates and metallic, 320·053 tons, value £29,229; other base minerals, value £71,772; total value, £13,318,206; total, if gold taken at estimated increased value, £14,287,022.



An E.R.P.M. shaft with its complement of white miners. Improved developments are now reported from this mine.

"Magnet House"

—head office and stores of the British General Electric Company, Ltd., situated at the corner of Loveday and Anderson Streets, Johannesburg. Branches are at 89, Castle Street, Cape Town, and 56, Field Street, Durban respectively, while B.G.E.C. service extends throughout the sub-continent, as agencies are established at Port Elizabeth, East London, Pietermaritzburg, Bulawayo, Delagoa Bay, Mozambique, Dar-es-Salaam, Zanzibar, Beira, Mombassa, and Nairobi.

REPRESENTING as they do, the immense manufacturing activities of the General Electric Company, Ltd., England, the B. G. E. C. are in the position to supply Electrical Equipment of every description.

The British General Electric Co. Ltd.

REGD TRADE MARK

Representing THE GENERAL ELECTRIC CO., LTD., of England

Head Office :—

Johannesburg

Corner Loveday and Anderson Streets
Box 2406 Phone 4242/3 Tel.: "Current"

Capetown
83/89, Castle St.
Box —— 1327
Phone —— 1401/2
Tel. :—"Induction"

Durban
56, Field Street
Box —— 922
Phone —— 1793
Tel. : — "Ampere"

Agents at:—Port Elizabeth, East London, Maritzburg, Bulawayo, Delagoa Bay, Beira, Dar-es-Salaam, Tanga, Zanzibar, Mombasa, Nairobi, Uganda, Etc.

Pretoria as the Site of a National Iron Industry.

By Percy A. Wagner and G. H. Stanley.

In view of the bounties now to be granted to encourage iron and steel works, the following report prepared by the authors for the S.A. Iron and Steel Corporation, Ltd., is now of interest.

While there is a consensus of opinion that the time is opportune for the establishment of an iron and steel industry in South Africa, doubt has been expressed as to the suitability of Pretoria as the site of such an industry, and some have actually gone so far as to predict failure on this score. It appears desirable therefore to discuss the question at some length and see how the Pretoria scheme stands in this respect compared with other ventures that have been or are in contemplation. As a preliminary to the discussion it may be useful to enumerate the factors that govern the location of an iron manufacturing centre. These are:—(1) The location of the iron ore to be smelted; (2) the location of coking coal to be used; (3) the location of the centre of population, or perhaps more correctly speaking, the centre of consumption of the area or country to be supplied.

Whereas it was formerly supposed that the first two factors were of paramount importance and a lively controversy was waged for years as to whether it is more advantageous to bring ore to coal or coal to ore, it has been proved of recent years by American economists that the third factor, which governs the cost of distribution of the finished products, is quite as important. The position of the centre of population of the Union has not as yet been determined, but the census of 1918 showed that 21.4 per cent. of the white population is concentrated in the greater Witwatersrand, Pretoria, Krugersdorp districts of the Transvaal, and there can be little doubt that the centre of white population is situated on or in close proximity to the Witwatersrand. The latter is certainly by far the most important centre of consumption for iron and steel goods other than heavy rails and railway materials, whilst Pretoria is the principal inland distributing centre in so far as the railways are concerned. As regards the distribution of finished goods the situation of Pretoria, distant 36 miles by rail from Germiston, the industrial centre of gravity of the Witwatersrand, is thus exceedingly favourable, and it will become even more so when the projected railway from Messina to West Nicholson in Southern Rhodesia is built. With regard to raw materials we have seen that the projected works at Pretoria are actually situated on one of the three great iron deposits of the country and in close proximity to another. Inexhaustible supplies of dolomite are close at hand, and the Witbank coal field, with its great reserves of coking coal, is only 70 miles distant.

The Pretoria Iron Mines, Ltd., is, moreover, the only concern of those contemplating the erection of smelting works that is in a position to begin operations on a large scale immediately without having to construct a single yard of railway, a very important consideration at the present time when rails are almost unprocurable. It is also the only concern that has tested the raw materials that it is proposed to employ on a working scale, and thus in a position to start right away at the point where the most modern establishments of Europe and America have left off.

The Different Schemes.

Turning to the competitive schemes. These are four in number, namely:—(1) To smelt the siliceous ironstone of the Pretoria series as developed between Potchefstroom and Frederikstad,[*] at Vereeniging, using coke made on the spot from Witbank coal. It is assumed that a source of pure dolomite can be located within 10 miles of Vereeniging and that Taungs limestone will be used in the steel furnaces. This scheme will be referred to as Vereeniging No. 1. (2) To smelt at Vereeniging, using the same sources of coke and fluxes, the high grade magnetite iron ore occurring in the Karroo beds on the farm De Roodepoort No. 67, either by itself or in admixture with the siliceous ore of the Pretoria series. The figures given in the table under Vereeniging No. 2 are based on the assumption that the ore will be smelted by itself. This as a matter of fact would hardly be feasible in view of the comparatively small tonnage of ore available on De Roodepoort No. 67. The costs on the assumption that a mixture of the two ores be smelted would be intermediate between those given for the two schemes. (3) To smelt at some point on the Witbank coalfield the siliceous ore of the Pretoria series as developed between Frederikstad and Potchefstroom, using Witbank coke and Taungs limestone. As regards dolomite, it is assumed that a source of this rock is available within a distance of 40 miles of Witbank. (4) To smelt the bedded iron ores occurring in the Karroo beds near Dundee and Newcastle in Natal, at a point on the Natal coalfields, using Vryheid coke and

Opening up the Iron Ore Deposits on Pretoria Town Lands.

---

[*] In this scheme and No. 4 it would be more advantageous to use Pretoria ore, but this cannot be done, as the Pretoria Municipality will not allow any ore occurring on the Townlands to be mined except it be smelted locally.

presumably Port Shepstone dolomite, as there is no more accessible source of limestone or dolomite in Natal. (5) For the sake of completeness a hypothetical case is added, namely, to smelt at Germiston, the industrial centre of gravity of the Witwatersrand, with coke made from Witbank coal, the siliceous iron ore occurring between Frederikstad and Potchefstroom, this being the most accessible occurrence in so far as Germiston is concerned. It is assumed that Irene dolomite and Taungs limestone would be used.

It is relevant to observe at the outset that an anomaly exists in regard to the relative railway rates for iron ore and coal, the former being carried at a little over one-quarter of the average rate of the latter. The reason of this is not clear. Assuming other costs to be the same in each case,† the difference between the several schemes will be in the cost of transporting the raw materials to the different sites and costs of distributing the finished products.

The Finished Products.

As regards the latter, it is assumed, in order to have a definite basis of comparison, (a) that two thirds of the total output of the works will be rails and railway materials to be delivered to the South African Railways at the point of production, which would become *ipso facto* the centre of distribution in so far as the railways are concerned, and (b) that the remaining one-third of the output will be sent to Germiston for distribution. As a matter of fact this places Pretoria at a disadvantage, for, with works once established there, there can be no question that it will itself become the principal distributing centre for iron and steel goods for the Northern and Eastern Transvaal.

It is also assumed that when smelting the ores of the Pretoria series, whether obtained at Pretoria or near Potchefstroom, there will be required per ton of steel produced:—2 tons of 50 per cent. ore; .3 tons of 60 per cent. ore for the steel furnaces; 2 tons of coking coal; .7 tons of furnace coal; .8 tons of dolomite when smelting the siliceous ironstone alone; .72 tons of dolomite when smelting a mixture of siliceous and clayband ore; and .3 tons of pure limestone. Manganese ore and fluorspar are left out of consideration as, in view of the small quantities required, the cost would be practically the same in every instance. Smelting the rich ore of De Roodepoort, it is assumed that there would be required per ton of steel produced 2 tons of 60 per cent. ore (including .3 tons for refining); 1.75 tons of coking coal; .7 tons of furnace coal; .4 tons of dolomite, and .3 tons of limestone.

Even under the unfavourable conditions assumed, Pretoria can more than hold its own with any of the centres considered. More formidable competition may be anticipated when the high grade Bessemer ores of Buffelshoek No. 151 and adjoining farms are rendered accessible by the construction of a railway to them. Even when this is done, however, the Pretoria Iron Mines, Ltd., will be in exactly the same position to utilise the ores as any prospective competitor, as they have secured an option over a considerable part of the deposit. By that time, moreover, the company will be producing iron and steel on a large scale, and the industry at Pretoria will be so firmly established that, beyond perhaps retarding expansion in certain directions, no amount of local competition will be able seriously to affect it.

Since this was written, Buffelshoek No. 151 and adjoining farms have been purchased by the South African Iron and Steel Corporation, Ltd., and the only serious source of competition is thus removed.

ANGOLA OIL DEVELOPMENTS.

The Companhia de Petroleo de Angola, a subsidiary concern of the Sinclair Oil Company of the United States, which has been prospecting for oil in Angola for several years, has recently obtained from the Government of the Province, after protracted negotiations, a fresh and more important concession, which should bring about a considerable increase in its activities. The main provisions of the concession, as described by H.M. Consul-General at Loanda, are as follow:—

The Government grants to the company the exclusive right up to August 15, 1986, to prospect for petroleum and other mineral oils, bituminous substances, and natural gas, throughout the whole of the Province north of the Benguela Railway and including the Cabinda Enclave, and to mark out claims within this area, which it shall have the sole right to exploit for all time. The company must expend sums on exploration and development during the next twelve years, ranging from 100,000 escudos per annum at par (£20,000) for the first three years to 350,000 escudos per annum at par (£70,000) for the fourth three years, and amounting in all to 2,850,000 escudos at par (£570,000). Thereafter the company must expend 400,000 escudos at par (£80,000) per annum until the output permits of a payment of a dividend of 7 per cent. on the 600,000 preference shares already issued, after which the Government will fix the expenditure within a maximum per annum of the sum last named. The company will be exempt until August 15, 1986, from the payment of export duties on its products and of import duties on machinery and all implements required for development and research. The company may abandon the concession at any time after December 31, 1923. The company must give to the Governments of Angola and Lisbon the prior right to purchase all petroleum products required by them for internal consumption, for their ships, and for the supply of their depots. From the time when the total production of the company's oilfields has reached 80,000 tons in each of the three consecutive years, the company must within two years erect at least one refinery, and must develop the refining industry in such a way that within five years from the time mentioned all the lighting and fuel oils required for the consumption of the Province and the metropolis shall be prepared in Angola.

INVESTORS' DIARY.

Forthcoming Company Meetings.

(a) Annual general meeting; (s) special or extraordinary general meeting.

Meetings will be held in Johannesburg unless otherwise stated.

Aug. 30.—Diamond Fields of Africa Exploring Co., Ltd. (a), 3 p.m.

Sept. 20.—Swaziland Tin, Ltd. (a), 12 noon.

Sept. 21.—Transvaal Gold Mining Estates.

Sept. 29.—Simmer and Jack Prop. Mines (a), 11.30 a.m.

Nov. 17.—Sub Nigel (a), 11.30 a.m.

Box 3807. Tel. 5892.

WRIGHT'S ROPES

H. ALERS HANKEY - - - Sole Agent.

---

†For this there is ample warrant, for while in the case of the Vereeniging No. 2 and Natal schemes slightly smaller amounts of ore, dolomite and coke would be required, the saving thus effected would be more than neutralised by the much higher cost of mining and handling the ore as compared with the other schemes. In this respect Pretoria stands unrivalled.

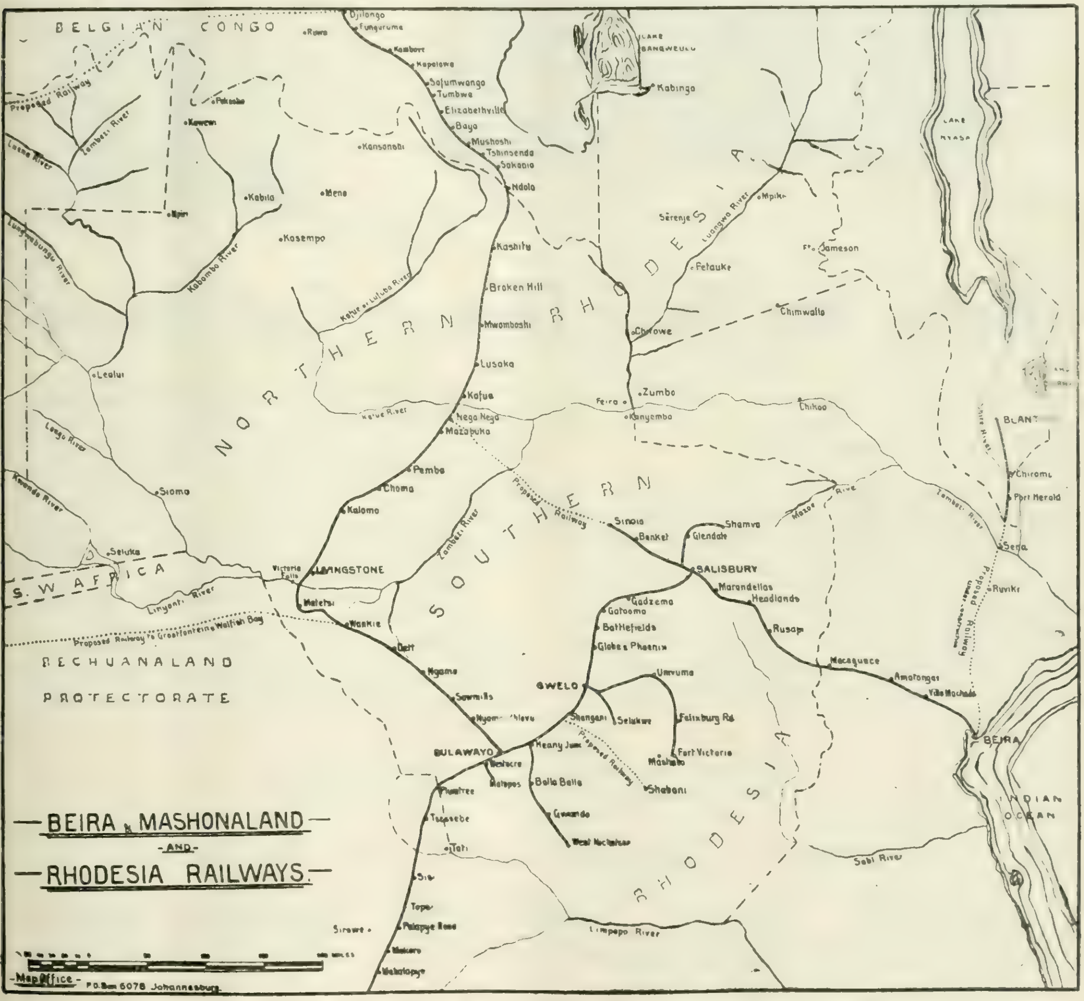
The Rhodesian Railways and the Union.

THE UNION'S TERMS.

The following statement has been issued by the Prime Minister's office in regard to the provisional agreement with the British South Africa Company for the expropriation of certain of its assets. The payment to be made by the Union Government to the British South Africa Company under the provisional agreement falls into two main classes:—

1. The consideration for the transfer of the railways, and

2. Payment of the amount due to the company in respect of past administrative deficits and for public works and other assets.



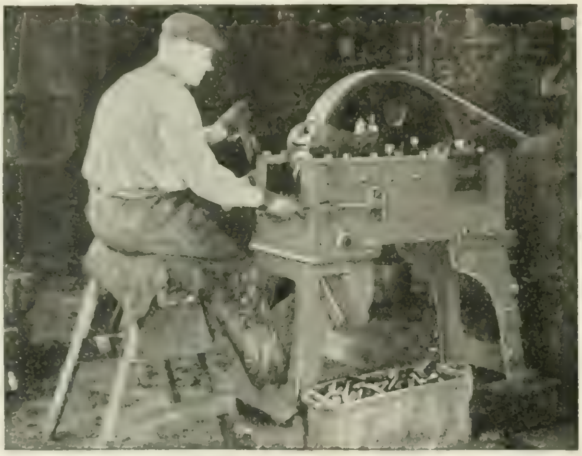
The latest Railway Map of Rhodesia, showing the lines the Union Government has offered to acquire.

The railway properties to be taken over comprise practically the whole of the shares of the Rhodesia Railways, Ltd., and the Mashonaland Railway Company, Ltd., which companies have a mileage of 2,003; claims of the Rhodesia Railways Trust, Ltd.—a subsidiary concern of the British South Africa Company in respect of advances made;, an option to purchase the line and equipment of the Rhodesia Katanga Junction Railway and Mineral Company, Ltd.; certain rights, including shares, held by the British South Africa Company in the Beira Railway Company and the Beira Junction Railway Company; working agreements which will enable the Union Government to operate the railways to the port of Beira up to the year 1951, and an option over the Blinkwater Railway, the only remaining private railway in Rhodesia, exercisable up to July 10, 1924.

65 Million Acres.

The shares of the Rhodesia Railways, Ltd., and the Mashonaland Railway Company, Ltd., were dealt with by the Union Government on the basis of an actuarial valuation of the profits.

In (2) the principal item is the amount of the company's administrative deficits as determined by the Cave Commission in respect of which the company is entitled, under the Privy Council judgment, to reinbursement out of the proceeds of sale of unalienated Crown lands. In consideration



Sullivan Cutter Bit Sharpener in Operation. At right, completed pick-point bits.

Better Bits Mean Cheaper Coal Mining

Would a cost-reducing idea appeal to you?

Of course it would!

So we believe you will welcome this new **Sullivan Rolling Cutter Bit Sharpener,** because it is especially designed to help you cut your COSTS and your COAL.

This sharpener makes new bits and re-sharpens old ones by precision methods, with proper shape, correct angles on the cutting edge, the necessary clearance, and with absolute uniformity.

The **Sullivan Rolling Cutter Bit Sharpener** is making these savings for its users :—

1.—Saving in power consumed by mining machines in cutting coal.

2.—A saving in mining machine upkeep, since dragging cutter bits and the severe strains caused by them are eliminated.

3.—Savings in the time and cost required for sharpening your bits.

4.—A saving in wastage of stock when resharpening.

5.—Saving of expensive delays at the face, since resetting is required less often with Sullivan roller-sharpened bits.

The cost of this machine will be returned to you very rapidly through these direct and indirect economies.

May we send you Sullivan Bulletin 72-LC and price?

COMPRESSORS AIR LIFT DIAMOND DRILLS SHARPENERS FORGES
FORGE HAMMERS COAL CUTTERS ROCK DRILLS DRILLING CONTRACTORS

THOMAS BARLOW & SONS (S.A.) LTD.

DURBAN
P.O. Box 1011 Tel. Add.: "SHIPMENTS"
'Phones: 1, 1965, 2322, 2460

JOHANNESBURG
P.O. Box 6901. Tel. Add.: "SHIPMENTS"
'Phone 6503

of this payment, the Union Government in the event of Rhodesia entering the Union, would at once take over free of encumbrance the unalienated Crown lands—some 65 million acres—certain important interests held by the company in alienated lands; also all public works and buildings, telegraphs, telephones, etc., which have cost in the neighbourhood of £1,750,000, and various assets, including livestock, equipment, furniture, and debtors of the Southern Administration, valued at somewhat over £500,000.

The Purchase Price.

Applying the principles of the Cave award in respect of the past administrative deficits as previously stated and including the public works, etc., mentioned above and the valuation of the railway shares, the purchase price determined by the Union Government amounted to £6,215,000 as at March 31, 1922, the last date for which figures are available. From this date to March 31, 1924, when it is to be expected that, if all the conditions precedent to purchase are fulfilled, the purchase will be finally completed, interest at the rate of 5 per cent. per annum was allowed; the addition of the sum gives the figure of £6,836,500 mentioned in the Press as the purchase consideration to be paid. Correspondingly, from March 31, 1922, surplus revenues of the railways and administration and receipts from land sales will belong to the Union Government. In addition to the above-mentioned properties, the British South Africa Company will make over its preferential rights in respect of land in the Bechuanaland Protectorate. The company retains its mineral rights and also its ranches and commercial assets.

The agreement is provisional on approval by the Parliament of the Union on the entry of Rhodesia into the Union not later than March 31, 1924.

The accounts of Mashonaland Railway Company for the year to 30th September, 1921, show a credit balance of £42,011, compared with debit balance of £36,408 for the previous year. This amount of £42,011 has been deducted from the debit balance at 30th September, 1920, of £1,675,227, giving a total debit balance of £1,633,215 at 30th September, 1921. A contract has been signed between the Union Minière du Haut Katanga and the Rhodesian Railway Companies for the carriage of large quantities of coal and coke from Wankie to the Congo border, and copper from the Congo border to Beira during the period 1st June, 1922, to 31st May, 1930.

The gross revenue of the Rhodesia Railways for the year ended 30th September, 1921, was £1,643,769, an increase of £235,917, and the net earnings totalled £427,628, an increase of £15,312. The working expenditure included £143,370 in 1920 and £237,666 in 1921, on account of provision for depreciation and renewals of permanent way, buildings and rolling stock. Previous to 1921 provision for depreciation and renewals was not included in working expenditure, but was charged in net revenue account. Expenditure increased by £220,605, chiefly due to the effect of higher wages granted in March, 1920, and to the increase of £94,296 in provision for depreciation to meet heavier renewals now necessary on the system. The net revenue account shows a credit balance of £45,590, compared with £21,995 for the previous year. This total credit balance at 30th September, 1921, was £256,476, which is carried forward. Since the last report the remaining £300,000 notes out of the issue of £2,000,000 have been sold stamped at price to yield 99 per cent. net to the company.

Mr. du Toit, Government Geologist, and Mr. Hughes, District Consulting Engineer, have been to Potgietersrust to report on the selected site for the new reservoir it is proposed to build. They have expressed no definite opinion, merely examining the preparatory shafts sunk by Mr. Chatwen, acting as Town Engineer, and taking samples of ground for analysis.

Wit Deep Development.

LATEST RETURNS.

The report of the Directors of the Witwatersrand Deep for the quarter ended 30th June, 1922, shows:—Total development footage, 547 ft.; total footage sampled, 315 ft. The payable reef disclosures were as follows:—Main Reef Leader, 210 ft.; reef width, 41.3 inches; assay value, 8.9 dwts. Main Reef, 55 ft.; reef width, 30.8 inches; assay value, 17.4 dwts. Average M.R.L. and M.R., 265 ft.; reef width, 39.1 inches; assay value, 10.3 dwts. Working profit, £26,092.

In arriving at the results above quoted, the value of the gold output has been based on the following estimated price per fine ounce:—April, £4 12s., less 1s. 9d. per fine ounce for realisation charges; May, £4 12s., less 1s. 9d. per fine ounce for realisation charges; June, £4 12s. 6d., less 1s. 9d. per fine ounce for realisation charges. Capital expenditure for the quarter amounted to £1,233.

Development results obtained during the quarter were as follows:—

LOCALITY.—EASTERN SECTION.	Footage Sampled.	Reef Width Inches.	Average Value Dwts.	Inches Dwts.
2158 Raise from Stope Drive M.R.L.	70	26.6	10.4	277
2360 Stope Drive East M.R.	5	20.0	12.5	—
2360 Stope Drive West M.R.	25	27.0	23.9	—
23 West Drive under 2360 Stope M.R.	15	47.7	9.6	—
2360 Winze from Stope Drive M.R.	10	20.5	25.2	—
23 East Drive M.R.L.	45	51.3	7.5	—
25 West Drive M.R.L.	55	52.5	11.0	—
25 East No. 1 Winze M.R.L.	40	40.3	5.5	—
23 West Raise under 2360 M.R. ...	30	*	—	—
24 East Drive M.R.L.	20	*	—	—

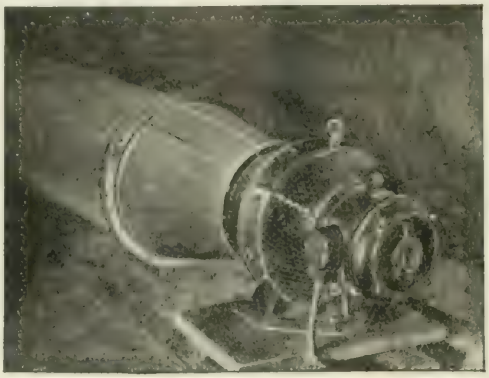
(* Unpayable.)

CAPE ASBESTOS.

The profit of the Cape Asbestos Company for 1921, after providing for taxation, bad and doubtful debts, and including income from Capamianto S.A.I., Turin, was £17,396, plus £9,136 brought in, making £26,532. After placing to reserve (increasing that fund to £58,525) £5,000, directors recommend dividend of 10 per cent. per annum, less tax, on ordinary shares, dividend to preference shareholders of amount equivalent to dividend, less tax, on ordinary shares, carrying forward £9,422. Directors report continued decrease in volume of trading during year owing to general depression in industry. Prices of raw materials have also continued to fall, necessitating further provision for depreciations in stocks.

MAGNOLIA
ANTIFRICTION METAL
"FLOWER" BRAND.
TRADE MARK
HAS THE LOWEST CO-EFFICIENT OF FRICTION.
KEEPS down the bill for lubricants, making BEARINGS smooth as glass and keeping them COOL under heaviest pressures and highest speeds.
Manufactured and Sold By—
THE MAGNOLIA ANTI-FRICTION
METAL CO. OF GREAT BRITAIN, LIMITED,
49, QUEEN VICTORIA STREET, LONDON, E.C.
Agents for South Africa: FRASER & CHALMERS, Ltd., Johannesburg, Bulawayo and Salisbury

SPECIAL VENTILATION IN MINES



. SIEMENS .
SCHUCKERT
SCHLOTTER
BLOWER.
80% EFFICIENCY.

AIR OR ELECTRICALLY DRIVEN. —————— COMPACT AND POWERFUL
A NOTEWORTHY ADVANCE IN DESIGN.—MOTOR CANNOT BE OVERLOADED
WHATEVER THE DUTY DEMANDED. —————— THE IDEAL BLOWER FOR
DEVELOPMENT WORK.

BRANCH OFFICE FOR SOUTH AFRICA :

C. KLEUDGEN, LTD.,

Corner of LOVEDAY and MARSHALL STREETS, JOHANNESBURG.
P.O. Box 1164. Telegrams : "KLEUDCO." Telephone Central 5435.

THE COST OF
DRY ROT ::

Several thousand feet of Conveyor Belt have been discarded recently on the Mines, due to deterioration during the strike.

Not a single foot was Robins Belt, however. All the Robins Belts installed in 1921 are still running with undiminished efficiency.

Robins Conveyors (S.A.), Ltd.

Box 4736, 'Phone 4182, JOHANNESBURG
Box 811, 'Phone 3383, DURBAN

"HUMBLE" SAFETY
DETACHING HOOK

SOLE AGENTS:

GEO. CRADOCK
—AND CO. (S.A.), LTD.—
75-77, CULLINAN
BUILDINGS.

P.O. Box 316. Telephone 539.
Tel. Add. : "ROPES."
JOHANNESBURG.

The South African Mining and Engineering Journal.

HEAD OFFICE: 176-180 Stock Exchange Buildings (2nd Floor), Fox Street, JOHANNESBURG, Union of South Africa.

Telephone **913**. P.O. Boxes **963** and **4573**.

Cables and Telegraphic Address: "MINING JOURNAL."

ANNUAL SUBSCRIPTION RATES: Oversea, £2; Union of South Africa and Rhodesia, £1 10s.; Local Delivery (Town only), £1 6s., payable in advance.

AGENTS FOR GREAT BRITAIN AND AMERICA: Argus South African Newspapers, Ltd., Byron House, 82-85, Fleet Street, London, E.C. 4.

Copies of this Journal are obtainable at all Branches and Agencies of the Central News Agency, Ltd., at all News Agents and Railway Bookstalls throughout South Africa, and at the London Agency as above.

CONTENTS.

PAGE
The West Springs Improving Development ... 1613
A New Lease of Life for the E.R.P.M. ... 1615
Pretoria as the Site of a National Iron Industry ... 1617
The Rhodesian Railways and the Union ... 1619
Topics of the Week ... 1623
Gold Discoveries in Tanganyika Territory ... 1626
Wit. Deep Development ... 1626
New Johannesburg Municipal Sub-Station 1627
The Distillation Experiments with South African Coal ... 1628
Letters to the Editor 1628
The New Cyanide 1629
Progress on "C.M.S." Subsidiaries ... 1630
Natal Colliery News ... 1630
Share Market 1631
Corner House Mines 1633

Trade and Industries Section:

The Week in the Mining, Motor and Engineering Trades 1635

TOPICS OF THE WEEK.

The Mining Outlook.

The gold mining outlook continues to improve. While the *Cape Times* is busy re-discovering the value of the Luipaardsvlei property of the Coronation Syndicate the *Rand Daily Mail* is equally enthusiastic over the gold mining prospects of the Rustenburg district, with which our readers are already familiar. It is, of course, all to the good that public interest should thus be attracted to the vast dormant possibilities of the Rand and of the outside districts, and we sincerely hope the efforts of our contemporaries will result in more capital being forthcoming to develop and prove the areas in question. But to our mind chief interest lies at the moment in the mines of the Rand which are now showing such wonderful recuperative power and holding out such greatly brighter promise. For the months of July and August, we believe costs will show a substantial reduction, and efficiency will be much improved. These factors may not in all cases be adequately reflected in the profits, owing to blocks of low-grade which will have to be disposed of for working reasons before higher grade ore is milled. But the whole tendency is in the right direction, and the news of improved development in several mines which we are able to record this week is a fitting supplement to the better working results of productive operations. Too much emphasis cannot be laid on the immense benefits which would result from a substantial decrease in working costs. The main benefits of these were set out in the statement of the Chamber of Mines printed last week as follows: (1) That there would be an opportunity for operating the spare plant at present erected on these mines, estimated to have a productive capacity of 6,000,000 tons per annum. The field for employment would naturally show relative expansion. (2) Mines owning very large areas, but at present operating with comparatively small reduction plants, would have an inducement to increase their scale of production, with a proportionate increase in the scope for employment. (3) Mines with small plants and limited lives would be able to continue operations for a longer period, and, although not necessarily requiring a greater number of men, would nevertheless be a factor in the market for labour. The conclusion of the Chamber of Mines' statement may also be repeated: "It has already been stated that the present resources of producing mines are calculated at 316 million tons of over 6 dwt. in value, and the importance of bringing into operation double this quantity would be of lasting benefit to the country. A reasonable assurance of a period of continuous efficiency bringing about a reduction in working costs would not only benefit the existing shareholders of producing mines, making their present holdings more remunerative, but they would no doubt feel some inducement to venture further capital, not only to expand existing enterprises but to support new undertakings."

The Union Miniere.

Lengthy reports appear in the European papers of the speech made by M. Jean Jadot, the President of the Union Minière Company, at the annual meeting in mail week. We hope to reprint some extracts from the speech in an early issue, as it is full of interest for all who follow the development of the big mineral fields of the Belgian Congo. M. Jadot had cause for pride when he was able to say that last year the Union Minière, with its output of 30,460 tons of copper, was the largest individual producer in the world. It is true that at this relatively early stage of the company's career that was a temporary phase, due to the big American producers having so drastically curtailed their operations pending a recovery in the copper market. But that the Union Minière should have been able to increase its output and pay its way during a period of crisis in the trade speaks volumes as to its potentialities of expansion and profit as better times come along. This year no less than 40,000 tons of copper are expected to be produced. But even that total bears but a modest ratio to the aggregate of over 4,000,000 tons of copper estimated to be contained by the 65,000,000 tons of ore already developed in the company's extensive concession. There is no doubt that much more ore remains still to be proved. In the western area, for instance, work has so far only been prosecuted on a small part of the mines. Last year's gross working result proves to have been 9,900,000 francs, which is a considerable falling off as compared with 1920, but fully accounted for by the abnormally low prices ruling for copper. This amount was again wholly absorbed by interest on debentures, sundry interest and various writings off. But, of course, the past year's financial results are no guide to the capacity of the Union Minière Company. Its big programme of expansion is still in an early stage—an issue of debentures is foreshadowed in the next six months or so—and it will be some time yet before the low-grade ore begins to be treated on a really large scale. Meanwhile, important concessions as regards freight charges—which constitute as much as 50 per cent. of this company's production costs—have recently been secured.

The World's Gold Supply.

A subject of unfailing interest to South Africa is the fate of the vast quantities of gold produced every year. In a recent discussion before the Institution of Mining and Metallurgy, Mr. S. J. Speak, the President of that institution had something of interest to say on the matter. He [illegible] out that [illegible] greatest value lies in the fact that the supply of new gold from mines is not liable to violent fluctuations. Prior to the great gold discoveries in California and Australia in 1848 and 1851 the stock of gold money in the world had remained steady for half a century at [illegible] per head. The subsequent increased output of gold had in 1871 brought up the amount to [illegible] per head, and corresponding to this increase in the amount of gold available for currency, the prices of commodities had risen 34 per cent. From 1871 until the discovery of the Rand gold production did no more than keep pace with the increase of population, with the result that in 1890 the prices of commodities had fallen 28 per cent. as compared with 1872. The large Rand gold production was the chief cause of a stock of gold money per head of [illegible] in 1910; the effect on prices of commodities was a rise of 28 per cent. by 1914 as compared with 1890. Such increase in the average price of commodities shows that since 1890 more gold was produced than was desirable; for the theoretical ideal was to maintain stability in prices of commodities and wages. The evil effects of a general rise in wages and prices of commodities are, however, not so serious as a fall. During the 20 years, 1895-1914, the gold output of the world amounted to [illegible]; of that amount it is estimated that [illegible] was used for industrial purposes, £247,000,000 was absorbed by India and China, and £852,000,000 became available as money. As the world's stock of gold money is to-day about £2,000,000,000, it will be realised what a considerable increase has occurred since 1895. The world's gold output during the year 1915 was £96,500,000; the output in 1921 was only £66,000,000. Mr. Speak considers that £96,500,000 was probably a larger quantity than was desirable. The important question is whether £66,000,000 is enough or too little for the trade of the world in normal times. If it should prove sufficient, then we must see a continuous fall in wages, with consequent industrial unrest for years to come. Far too much attention, Mr. Speak considers, is being paid at the present time to the restoration of parity of exchange with the U.S.A., as if that were the ultimate goal. Should we reach parity, our currency will still be unsound, for the U.S.A. currency is itself on an unsound basis. The average price of commodities in the U.S.A. is now about 50 per cent. higher than before the war. In that instance it is perhaps more correct to say that gold has depreciated there 33⅓ per cent. The interior gold production of the U.S.A. has meanwhile fallen off so appreciably that not enough gold is being produced to supply the requirements of its arts and manufactures. Under such circumstances why should the value of gold have depreciated? The answer is that, owing to the war, most of the ordinary purchasers of gold have not been in a position to buy, and the U.S.A. has thus been left as the chief market. Gold has to be sold to her under similar conditions as all goods have to be disposed of when purchasers are scarce; that is to say, at the best price obtainable. The U.S.A. being on a free gold basis of currency, all gold delivered there can receive its minted equivalent. The result is that the U.S.A. has been obliged to receive more gold than she really needs for currency purposes, which keeps up high prices for her commodities. The war having transformed her into a creditor nation, she is now in the peculiar position of being overburdened with currency, and she must either lend the excess above requirements abroad, or else see a general rise in the price of commodities.

The Chamber and the Unions.

In view of the forthcoming "conciliation meeting" of the Mining Industry Board the following letter may be put on record, having been addressed by the Gold Producers' Committee of the Chamber of Mines to the Rockbreakers' Association, Engine Drivers' and Firemen's Association, and the Reduction Workers' Association, the three unions which have accepted the terms of recognition laid down by the Chamber: "The following is the procedure now in operation in regard to the discussion of matters between the recognised unions and this committee in regard to complaints on the mines. Matters of general principle affecting the industry as a whole brought up by the unions will be dealt with between the Chamber of Mines (through the particular section of the Chamber affected) and the unions. Matters affecting a particular mine, and not the industry as a whole, will be dealt with by the mine concerned. The procedure to be followed in regard to complaints on individual mines is as follows: (a) That until the workman concerned, or where a considerable body of workmen are concerned, a deputation representing them, have discussed the particular complaint with the management, the union officials will not be recognised. (Note: The employees concerned would, of course, in the first instance discuss the matter with the particular official directly concerned, and only subsequently with the manager himself.) (b) If, after a discussion, no agreement is arrived at it shall be competent for one whole-time recognised official to discuss the matter with the mine manager. The man concerned in the dispute would not be present at the interview. (c) That if an agreement is still not reached the man concerned, or where a considerable number of men are affected, the deputation representing them, may again interview the management, bringing with them the said union official.

"As regards meetings on the mines and visits of trade union officials, the following recommendations have been issued: Facilities may be given on application from employees for the holding of meetings in any suitable place other than change houses at the discretion of the manager. No meetings to be allowed to take place during working hours nor immediately before the commencement of any shift. Permission for the visits of any officials of a recognised union shall only be given upon application to the manager of the mine, and shall be by arrangement with the manager."

The executive of the Rockbreakers' Association have discussed this letter. Questioned as to the views of the association, an official said: "The opinion was that it was quite adequate for present requirements, and that it might develop from time to time in the light of experience, and with the recovery and growth of the trade union movement."

Notes & News.

The Crown Diamond Mining and Exploration Co., Ltd.

Consequent upon the reconstruction of this company and the satisfactory results obtained from the exploratory work and the tests of blue ground, active steps have been taken to prepare the mine for production on a big scale and to reconstruct the equipment to enable it to treat 50,000 loads of blue ground each month. This work is now in progress. The Board have decided to instal an electric plant and drive the new machinery by electricity instead of by steam. This will make for increased efficiency and lower working costs. Further exploratory work is also in progress at the 540 ft. level, where an area of clean blue ground, larger than that at the 440 ft. level, has been found, from which a recent test of 1,089 loads yielded 20·5 carats per 100 loads. In view of these encouraging results, steps will now be taken to deepen the prospecting shaft in order to open up and explore a lower level, the development of which may prove to be of great importance.

* * *

Heidelberg Gold Reefs.

The Heidelberg District Gold Reefs Vigilance Committee held a meeting last week to receive the report of the delegates to Capetown and decide upon further action. They passed three resolutions, namely: 1. To ask the Mining Department for a copy of Mr. Hutton's report on the Heidelberg District. 2. To ask the Government to have the Heidelberg District put on the same footing as "The Reef" in regard to the proclamation of ground. 3. To ask what the result is of the Minister of Mines' promised consultation with Dr. Molengraaf.

Springs Mines.

The Springs Mines made excellent profits in July, and the prospects of the mine are improving. The additional crushing plant is now completed but it will not be fully utilized until the new shaft is ready to be put in commission.

* * *

Aurora West.

An interesting letter on the position of this mine appears in this issue which should commend itself to shareholders. It would seem that this mine, like its low-grade compeers, is about to enter on a new lease of life, and is likely to reward the shareholders for their patience in the past.

* * *

Modder B Development.

The interesting development returns from the Modder B.—that for the quarter ended June 30th—show that the payable reef disclosures were, Main Reef Leader, 1,315 feet, 17 inches wide, going 37·4 dwts. The native labour shortage at the beginning of the quarter was made up rapidly, and mining and development operatons are now proceeding normally. Hoisting from the South-West shaft has commenced, and the new surface haulage to the central shaft is now operating.

* * *

Death of Mr. G. Bonnard.

We learn with deep regret of the death in mail week of Mr. Gustave Richard Bonnard, formerly chairman and managing director of the Amalgamated Properties of Rhodesia, Ltd., which is now known as the Rhodesia Exploration Company, Ltd. Mr. Bonnard had been seriously ill for several months and, as he had been unable to give that close attention to business which had been one of his chief characteristics, he had resigned practically all his numerous directorships of mining companies. It may be recalled that Mr. Bonnard was the leading figure in a big Rhodesian law case some years ago, which lasted well over 100 days.

* * *

The Two Rhodesian Chambers of Mines.

At the annual meeting of the Salisbury Chamber of Mines, Mr. D. V. Burnett, who presided, was re-elected President for the ensuing year. In his address he reviewed the work of the Chamber during the year at length, discussing the output and the reduction of wages in accordance with the reduction in the cost of living. Sir Raleigh Grey asked whether anything further had been done in connection with the negotiations for the closer union of the two Chambers. There was nothing upon the subject in the report, and he would like to know if anything further had been done. He believed it would be a good thing for the Chambers if something could be done, although he did not think the Salisbury Chamber should be absorbed. He recalled that when the matter was prominently before them two years ago the feeling of the members appeared to be in favour of amalgamation. In his opinion it would be a good thing for the industry throughout the whole country for a closer union of the two Chambers. The Chairman said this matter was brought up a year ago, and considerable discussion took place concerning it. There was a feeling then that one of the difficulties in the way of amalgamation was the fact that most of the meetings would have to be held in Bulawayo, and the outcome of the discussion was that it was decided to leave the matter in abeyance for a short time. As Sir Raleigh Grey had already said, it would be of great benefit to the industry if some satisfactory scheme of amalgamation could be agreed upon, but he would like to mention that, as it was, there had been, during the past year, far closer co-operation between the two Chambers, which had consulted on various important matters and arrived at an agreement before the necessary letters were written in connection therewith. However if the Executive Committee thought it advisable during the coming year that something further should be done with a view to bringing about a closer union of the two Chambers they would, no doubt, give the matter their earnest attention.

* * *

Johannesburg 5½ per cent. Stock.

Interesting details appear in the London papers regarding the Johannesburg Municipal Loan. It is 17 years since Johannesburg made a public issue in London, and the offer in mail week of £1,000,000 in 5½ per cent. stock will raise the total outstanding to £6,750,000, the existing block bearing 4 per cent. interest. The proceeds are needed for various public services, including gas, water and electricity supply, tramways and sewage disposal. The aggregate indebtedness of the town is £7,595,000, of which £2,849,300 is represented by reproductive undertakings. The rateable value is £37,700,000, and revenue for the last fiscal year ended 30th June showed a surplus over expenditure of £71,300. The stock ranks with the old in a first charge on assets and revenue and is redeemable by means of a cumulative sinking fund on 1st September, 1952, though the Council can anticipate that date on and after 1st September, 1937, on three months' notice. The price is par, but though the last instalment (10 per cent.) is not due from subscribers till 27th September a full six months' interest will be payable on 1st March next. The stock is described by the financial papers as a thoroughly sound municipal security.

* * *

The Standard Bank.

At the meeting of shareholders of the Standard Bank of South Africa a few days ago, in London, the Chairman, Mr. E. Clifton-Brown, congratulated them on the satisfactory state of the accounts, despite the staggering blow which South African trade received in 1921. The amalgamation of the African Banking Corporation was not merely in the interest of the shareholders, but of the South African community. He disagreed with the opinion that a reduction of competition among the Banks was dangerous, and contended that there had been too much unhealthy rivalry in the past, which was dangerous to the best beneficial interests of the country. The rates for money were higher in South Africa than at home, but this was warranted by the fact that business there could not be so cut and dried as in this country generally; but he ventured to say that the Standard and other Banks never refused to give farmers credit or other clients reasonable assistance. He regretted the Banks' loss of the note issue, but remarked that it was a matter for congratulation that the substitution of Government notes had been affected so smoothly. He contemplated the future with great confidence, and thought South Africa was learning perhaps more quickly than any other portion of the world that true prosperity could only be attained by increased production, thrift and industry.

* * *

Joint Stock Companies at the Cape.

Joint stock companies with limited liability to the number of 128, with a capital of £6,522,925, were registered during the year 1921 at the Cape; in 1920, 182 companies were registered with a nominal capital of £12,151,615. In taking the whole activities transacted in the Deeds Registry, there was in the Cape Province a considerable contraction of business during the year 1921. Annexed to the report are comparative tables from which it appears that the number of transfers in 1921 were 10,853, and the properties were valued at £12,443,401, as against 17,257, £20,131,319 in 1920; 14,073, £13,629,211 in 1919; and 11,542, £9,595,535 in 1918. New bonds passed in 1921 numbered 10,206, and the value £12,963,102, compared with 8,783, £12,375,852 in 1920; 6,995, £9,261,159 in 1919; and 5,385, £5,545,880 in 1918. The number of bonds cancelled in 1921 was 5,449, and the total value £5,494,326, compared with 7,950, £7,200,115 in 1920; and 7,659, £6,540,564 in 1919.

Gold Discoveries in Tanganyika Territory.

MANY CLAIMS PEGGED—ENCOURAGING RESULTS—RAND ENGINEERS ON THE SPOT.

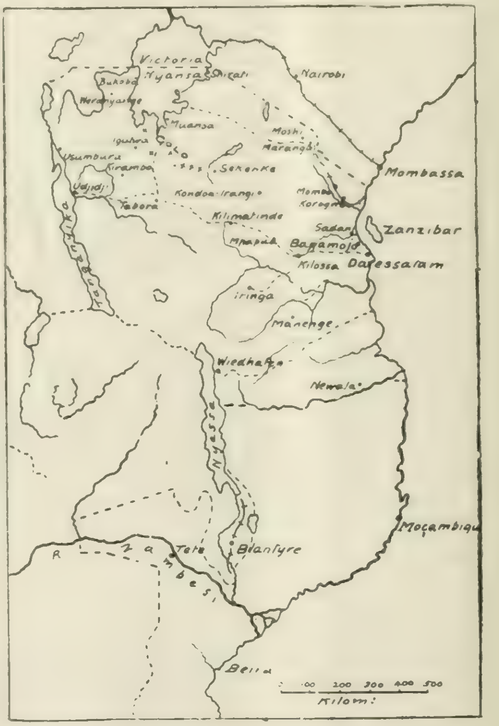
Since the promulgation of the Mining Regulations last year, a considerable number of claims have been pegged for gold prospecting. A few properties of these lie in the Mwanza district, and we are pleased now to be able to report the location of a gold reef of high value there, says the *Dar-es-Salaam Times*.

How far it extends there is not sufficient development yet to allow one to estimate, but it has a dip of about 40 degrees, and prospecting trenches cannot show that so far the dip and thickness of the reef continue. The prospector working on the claims already has about 110 ounces of rough gold, produced by the crude methods of hand crushing and amalgamation in the pan. A test made by one of the Government Mines Inspectors, yielded about 3½ ozs. of gold to the ton. Prospecting trenches have opened outcrops of visible gold. We look forward keenly to further news from this area. We learn that other prospectors have already produced by crude methods similar to those mentioned about 30 ozs. of gold. While perhaps the amount of reef so far exposed need not call forth the excitement of a gold rush—indeed it may quite possibly peter out shortly—the fact of the rediscovery of gold in the Mwanza area is very significant, and holds out splendid promise for the ultimate mineral development of this district. The Germans had a number of opened-up gold mines and plant throughout the area. Much has been said from time to time of the German failure to make profits out of their gold ventures in this country, and it was often used as one of the arguments in the not-very-far back days against throwing open the country to mining and prospecting. But because the German miners had no knowledge of economical mining is no proof of the unpayability of the mines. We know that in the case of the Sekenke Gold Mine the average German working costs were something over 50 shillings per ton, whereas Mr. Cogle, the well-known Mining Engineer of South Africa, who reported on the same property, estimated that the costs should not exceed 29s. 6d. per ton. On the Witwatersrand, where systematic and economic working is a fine art, certain mines before the war were being worked at as low as 16s. 0d. per ton. Even in the outside goldfields of Lydenburg and Barberton, were transport difficulties were a considerable anxiety, the average costs during the war were 28s. 6d. per ton. And South African native labour averages about £3 5s. per head per month (including food), as against less than £1 per head per month in this country.

It is an obvious conclusion, then, that the German knowledge of economical gold mining in this country was very limited. This fact leads us to believe that the pre-war German gold mines, far from being condemned for unpayability, would probably be well worth the careful investigation of let us say South African mining houses. Capital is needed to open them up and to work them systematically; and this is what we would keenly like to see.

It is interesting to learn that the Corner House group, the biggest and most influential mining group in South Africa, are taking an interest in this country's mineral wealth. Two of their representatives, one of whom is Dr. Merensky, the well-known geologist, were here recently, on a visit through certan portions of the territory. What the result of their visit will be is awaited with interest, but it is hoped that it wll ensue in mining and developmental capital being invested in Tanganyika. That it would give a tremendous fillip to the opening up of our mineral resources is not to be doubted. The German mines and new areas need capitalist houses to exploit them. The discovery reported at the head of this article will doubtless arouse considerable interest. That 110 ounces of rough gold have been extracted by an individual within a comparatively short period, by the very primitive and wasteful method of hand crushing and pan-amalgamation, shows that gold is there. And apparently the gold is not just in a small pocket, but in a genuine reef, which may continue to depth.

The most important mineral produced in this Territory hitherto has been mica. In the Uluguru Mountains, three German companies worked the product extensively before the war, and the value of the export rose each year from the time of the commencement. The quality is reported on as being excellent, and fairly large plates are found. In the matter of economic mining costs, government mining, equally with that of the Germans in regard to gold, does not come prominently to the fore. That is why our administrative mining of mica during the war did not show a profit. But production then was of more urgency than profit.



Sketch map of the former German East African territory, showing gold occurrences.

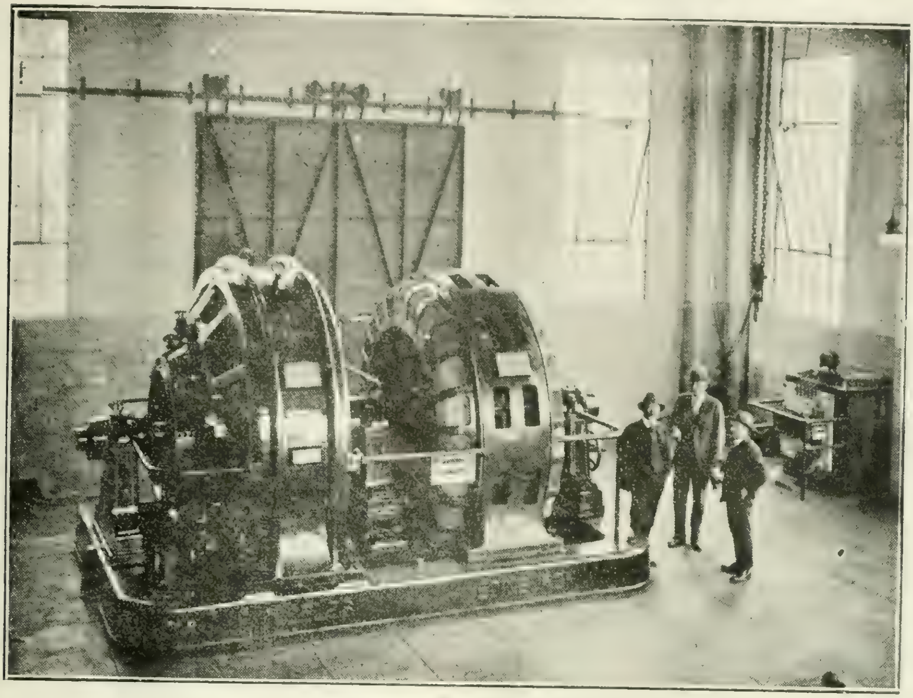
The mica of this country, for its size and quality, is well worth looking into. Prospectors are working certain claims now in the Uluguru Mountains, and, we understand, have already reported a small quantity of good mica.

The attraction of capital for the mining exploitation of this country is a necessity, and it is to be expected that every facility will be given to mining houses desirous of opening up here.

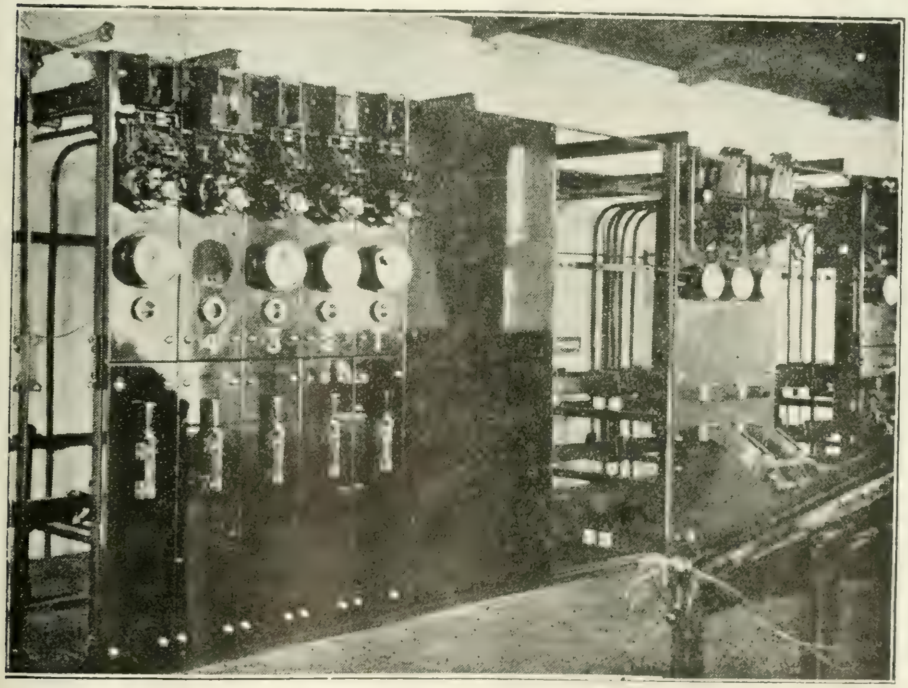
A British Engineering Exhibition in 1923.

During the year 1920 a very successful exhibition of shipping, engineering and machinery was held in London. Under the same auspices a similar exhibition is now being projected for the autumn of 1923. The preliminary arrangements have already been completed and the management is confident of getting together a thoroughly comprehensive display of engineering exhibits especially relating to shipping and factory equipment.

New Johannesburg Municipal Sub-Station.



Motor Converter in the New Central Sub-Station.



Two views of the interior of the new Johannesburg Municipal Sub-Station. The top photo shows Mr. B. Sankey, the Town Electrical Engineer, and chief officials, and the lower photo shows the switchboards of the new station.

The Distillation Experiments with S.A. Coal.

THE REPORT OF THE BRITISH FUEL RESEARCH BOARD.

By T. G. Trevor, Inspector of Mines, Pretoria.

The report of the British Fuel Research Board is far too technical for abstract or criticism by any but specialists in this new and as yet little known field of economic science.

The following explanatory notes as to the reasons which led to the investigations being made and the origin of the samples, will, however, be of interest. It has been realised all the world over for at least fifty years that the most wasteful method of using coal was by direct firing, for it was early pointed out that in the direct combustion of coal in a steam boiler 20 per cent. of the heat only is utilised, whereas by carbonisation, that is, coking and the production of gas, etc., 85 per cent. of the heat value, as well as various by-products, can be obtained. In the original coking ovens carbonisation was conducted at a very high temperature in order to produce metallurgical coke, and the by-products were lost.

About 1890, by-product processes were commenced. In 1893 the total coke produced in the United States by by-product ovens was only twelve thousand tons, in 1920 this amount had increased to approximately thirty-one million tons. In the meantime, the product of coke from non by-product producing processes had increased from nine to twenty-one million tons. The original carbonisation processes were all conducted at a temperature exceeding 900 degrees centigrade (1652 Fahrenheit). In the last fifteen years, however, it has been realised that carbonisation at low temperatures, that is, at temperatures between 400 and 600 degrees centigrade, had very many advantages, in that less gas is produced and more tar and lighter oils, as well as other complex by-products for which uses have been discovered, and for which the price is high. It was, therefore, obvious that theoretically the best value could be obtained from coal by low temperature methods of carbonisation, but it was also found that certain coals were more suited to this purpose than others.

In the year 1917 the question of the future supplies of fuel for the British Empire appeared so serious to the Imperial Government that a Fuel Research Board was established. One of the first questions investigated by this Board was that of low temperature carbonisation, and the suitability of the various coals of the Empire for that purpose.

Sir George Beilby, F.R.S., the Director of the Board, carried out the preliminary study of some fifty South African coals. As a result of this study, he requested the Union Mines Department to send him samples of ten typical good bituminous coals, containing not less than 25 per cent. volatile matter. These samples were obtained by the Inspectors of Mines, Natal and Pretoria, from producing collieries of standing, which were selected as producing typical high-grade bituminous coals, representative of the Natal and Transvaal coal-fields. The samples were in each case taken from the working faces, as average samples of the coal mined, and were immediately placed in air-tight canisters for transmission. In deference to the wishes of some of the companies concerned, the names of the individual mines from which the samples were obtained were not published, though each company was informed of the result of its own sample.

Sample No. 1 represented the Vryheid District, Natal.

Samples Nos. 2, 3, 4 represented the Newcastle and Dundee Districts, Natal.

Samples Nos. 5, 6, 8, 9 represented the Witbank District, Transvaal.

Sample No. 7 represented the Ermelo District, Transvaal.

In considering the results obtained, there appears to be no essential difference between the samples sent from the various districts—differences of equal importance occurring between the coals of neighbouring mines, as between the various groups.

The best coke and the largest proportion of oil and rich gas were yielded by the Vryheid sample, and by two of the Natal samples, and it is stated that from these two or three gallons of good motor spirit could be obtained per ton, which was the highest return of this important by-product yielded by any of the samples.

The tests were made at a temperature of 600 degrees centigrade, and the chief difference in the result is in the quality of the coke produced. The mechanical quality of the coke, however, is so dependent on the temperature of carbonisation, that these tests must not be accepted as coking tests in the ordinary sense.

The tests are extremely gratifying, for they show that all the samples, with the exception of that from the Ermelo district, proved satisfactory for carbonisation at a temperature of 600 degrees.

Though the results are so satisfactory, the conclusion must not be drawn that a by-product industry is immediately feasible in South Africa. It would evidently be feasible and profitable in a locality where all the products, including the gas and soft coke, were saleable at a reasonable price, but even if one of these products were not saleable, then the prospects of any such undertaking would be very seriously prejudiced.—*Journal of Industries.*

Letters to the Editor.

THE MINING INDUSTRY BOARD.

To the Editor, *S.A. Mining and Engineering Journal.*

Sir, I am directed by the members of the Mining Industry Board to convey to you their thanks and appreciation for having furnished them during their stay in Johannesburg with copies of the *South African Mining and Engineering Journal* which has been read by them with much interest.

I am to inform you that the hearing of the evidence has now been completed and that the Board has adjourned for two or three weeks. It will re-assemble in Johannesburg for a day or two about the 14th August, for the purpose of holding a Conference, after which the members will proceed to Capetown to prepare their report.—Yours, &c.,

J. COLLIE, Secretary,
Mining Industry Board.

AURORA WEST UNITED.

To the Editor, *S.A. Mining and Engineering Journal.*

Sir,—As many of your readers may be interested in this concern it may interest them to know of the improved position there which is briefly as follows: After several decades of hard labour they have found the rich zone formerly worked by their neighbour, and the assays for this quarter, are double the past milling values, and taking the ore assays at only 32s. per ton, and the width about 22in., this will give about 100 per cent. on present share quotations. There are several years of rich reef to be won, plus another 11 to 16 years of improved values. One hundred and twenty thousand tons yearly can be crushed, and the assays of 11·8 dwts. for this quarter would yield more than 32s. per ton, if maintained, but this estimate of under 8 dwts. milling value is safest, especially if lower grade rock is milled with the richer grades.—I am, etc.,

VALUATOR.

The New Cyanide.

MANUFACTURE DESCRIBED.

At a recent meeting of the C. M. and M. Society of South Africa, Mr. N. W. Buch gave the following description of the new cyanide:—

Standard text-books gave the reactions involved in the manufacturing process, but the complete commercial development of the process was not accomplished until early in 1919. Attempts to manufacture this type of cyanide had been made during the past twenty years without success. The manufacture was undertaken during the war for the purpose of supplying cyanide owing to a shortage of this material existing in America. A low-grade cyanide was manufactured which was used with satisfactory results. The greater part of the requirement of the mining and citrus industries of America was to-day being supplied in the form of cyanimid cyanide. Recently the case hardening and the electroplating industries had also taken up the use of this material in specially prepared form.

The cyanide under discussion was manufactured from cyanamid, which was a nitrogenous fertiliser used as a substitute for nitrate of soda and sulphate of ammonia.

Cyanamid was manufactured by first fusing coke and lime in electric furnaces of approximately 15,000 h.p., the product being calcium carbide. This was pulverised to about 100 mesh, using tube mills, grinding being done in an atmosphere of nitrogen. The finely divided carbide was then placed in electric furnaces of special design, and nitrogen passed through the finely divided charge. The reaction was exothermic after once started. The calcium cyanamid was then fused with salt in another type of electric furnace, the resulting product being the cyanide under discussion. The cyanide as tapped from the furnace must be chilled quickly, otherwise reversion takes place to cyanamid and carbon. This reversible action was very interesting and unusual. The material was of a black, shiny appearance in the form of thin scales, varying from 1-16th to 1-32nd of an inch in thickness, and from ¼in. to ½in. in area. The approximate composition is as follows:—

Sodium cyanide (equiv.)	49.90%
Cyanogen	26.66%
Calcium	33.15%
Sodium	15.30%
Chlorine	17.50%

It was of interest to note that at least part of the cyanogen was present in the form of calcium cyanide. The results as to extraction, precipitation and cyanide consumption had shown no differences from the grades of cyanide used heretofore in the treatment of gold and silver-bearing ores. Owing to the content of unhydrated lime it was preferable to dissolve the new cyanide in a solution tank to prevent localised heating of the mass which causes decomposition of the cyanides present. It was advisable to have some method of agitation during solution. He hoped that this brief description of the product and method of manufacture in Canada of this new cyanide would be found interesting and informative.

In the discussion that followed Mr. H. A. White said he would like to remark that the furnace used for transforming calcium cyanimide into calcium cyanide must be of a somewhat peculiar type, because a lot of experiments were made in this country during the war in the attempt to perform that same operation. They were made on a fairly small scale. He believed Dr. Caldecott could tell them he had made some on a fairly large scale—up to 100 pounds; but the difficulty was that they could not get the cyanide up to anything like 50 per cent., probably the difficulty of cooling it sufficiently rapidly in large pieces was responsible.

Rhodesia Copper.

The thirteenth ordinary general meeting of the Rhodesia Copper and General Exploration and Finance Company, Ltd., was held on June 27, at the Cannon Street Hotel, London, E.C., Mr. Edmund Davis (the chairman of the company) presiding. The chairman said, *inter alia*:—We now present our balance sheet and profit and loss account at March 31, 1922, and have set out in the report a summary showing how the issued capital—namely, £176,010—was represented at the date of the balance sheet, the total after deduction of the creditors and credit balances amounting to £204,330, or a surplus of £28,320. You will notice in the balance sheet that at March 31, 1922, the investments taken into the accounts at or under cost stood at £175,024, but in the summary set out in the report we have taken the quoted sundry debentures, stocks, investments, shares and interests, which stand in the books at £87,408, at £84,950, being market value at March 31. We have in accordance with custom set out our interest of £50,000—five and a half per cent. first mortgage debentures and 12,500 fully-paid "B" shares of 1s. each in the Rhodesia Katanga Junction Railway and Mineral Company, Ltd.—at £35,000, being the amount at which they stand in our books. It is satisfactory to know that not only is this particular company earning sufficient interest to pay its debenture interest, but in addition is earning a satisfactory surplus.

AFRICAN IRON & STEEL PRODUCTS
LIMITED
SPECIALISTS IN AND MANUFACTURERS OF
TUBE MILL LINERS,
ENDS & SCREENS, Etc.,
MASS PRODUCTION.
AIR BRICKS, SASH WEIGHTS AND OTHER BUILDERS' AND PLUMBERS' SUNDRIES.
REPETITION WORK IN IRON AND SEMI-STEEL.
Works: DENVER STATION.
— Telephone 64 Cleveland.—
Head Office: 180, Main Street, JOHANNESBURG.
Telephones 5770 and 3248.
Telegraphic Address: "MAUBROWN," Johannesburg.

Progress on "C.M.S." Subsidiaries.

LATEST DEVELOPMENT RETURNS FROM SPRINGS AND BRAKPAN.

The linear development at the Springs Mines during the quarter amounted to 2,021 feet, of which 1,730 feet were sampled, averaging 25·94 dwts. over a reef width of 31·05 inches. Of the footage on reef 1,050 feet, equivalent to 59·5 per cent. of the sections sampled, were payable, and averaged 32·72 dwts. over 29·36 inches. The above footage includes development work from No. 3 shaft. The net working profit for the quarter was £67,233 12s. 6d. A few items in connection with this extension have been completed and have already been put into commission. Some work still remains to be done on the installation of compressors, but this is expected to be completed by the time No. 3 shaft will be ready for hoisting. Meantime the tonnage treated is restricted to the capacity of No. 2 shaft, which is in the neighbourhood of 43,000 tons per month. The expenditure on lease area capital account for the quarter amounted to £49,040 8s. 4d. The actual premium on gold for the three months ended Mar. 31, 1922, was £1,158 1s. 2d. in excess of the amount estimated. As the Rand Refinery is now in a position to deal with the gold won on the mines of the Rand, all gold produced by the mine is now sent to the Refinery, and thereafter shipped to London for disposal. Owing to the satisfactory manner in which natives have been coming forward, the depletion of the native labour force due to the strike has now been made up, and the mine has a sufficient labour supply for its present requirements.

Brakpan Mines.

The linear development amounted to 2,962 feet of which 2,060 feet were sampled, averaging 9·17 dwt. over a reef width of 37·62 inches. Of the footage on reef, 1,045 feet, equivalent to 51 per cent. of the sections sampled, were payable, and averaged 16·11 dwt. over 34·78 inches. The net working profit for the quarter was £105,306 8s. 6d. A special clean-up of the reduction plant was made during the industrial upheaval in the early months of the year. The gold so obtained was held in suspense as being equivalent to that which would be absorbed by the plant upon the restarting of operations. This absorption having, however, been met by an increased yield from the mine, it has been decided to add the gold held in suspense, amounting to 6,500 fine ounces, valued at £30,330, to the July declaration of profits. Under the terms of the lease agreement, the ore reserve had to be recalculated half-yearly during a period of five years. This period has now lapsed, and in future the ore reserve will be estimated annually as at December 31 in each year. During the quarter the connection of No. 3 circular shaft with the main incline from No. 2 shaft was effected. At present the permanent equipment is being installed and a certain amount of development work is being done from this shaft. The capital expenditure during the quarter amounted to £33,289 11s. 10d. As the Rand Refinery is now in a position to deal with the gold won on the mines of the Rand, all gold produced by your mine is now sent to the Refinery, and thereafter shipped to London for disposal. Owing to the satisfactory manner in which natives have been coming forward, the depletion of the native labour force due to the strike has now been made up, and the mine has a sufficient labour supply for its present requirements.

Natal Colliery Notes.

By Our Special Commissioner on the Natal Coal Fields.

The Dundee Company's new by-product plant, which is situated three miles from Waschbank Station along the main line to the Burnside Colliery, is now practically completed, and it is hoped to celebrate the official opening of the works at the end of August. It is anticipated that one or two Cabinet Ministers will be present at the opening ceremony. In point of fact the works commenced production some few weeks ago, and are now turning out substanital quantities of coke, tar, and other products. These are of excellent quality. The coke is of exceptionally hard and dense character and already has found a large market in the Otavifontein Mines, to which substantial quantities are continually being despatched. As to tar, the company has secured an important contract for the supply of this commodity to the Durban Municipality. The company intends to manufacture numerous other by-products in the near future. The plant, which is the finest of its kind in the country (it compares indeed most favourably with by-product plants elsewhere in the world), has been supplied and erected by the Coppée Company of Great Britain. It includes 30 Coppée ovens with provision for extension to 50 ovens, and the latest type of tar plant, etc. Waste heat is employed for steam raising, and the whole equipment represents the last word in by-product practice.

View of a Natal Coal Mine.

* * *

The Natal Navigation Company has now virtually completed equipment of its new No. 4 and 5 Pits situated about four miles from the company's original colliery. The screening plant has been completed, erection of the washing plant is well under way, and with the arrival of the electrical installation the new equipment, which is of the most modern and efficient design, will be in a position to produce over 2,000 tons per day. At present about 250 tons per diem are being despatched from the new pits. Development of this area is well advanced, and the coal is of excellent quality.

The T.G.M.E. Strike.

The Secretaries write:—"We are instructed by the Directors to forward you the following information for publication: At Elandsdrift Mine high-grade ore has been exposed on the fourth level at the intersection of the reef with the extension of the Blow. The occurrence is encouraging, but insufficient work has yet been done to prove its extent. Progress will be slow owing to heavy water and difficult ground."

The Week in the Sharemarket.

BIG BUYING OF POPULAR SMALL-PRICED STOCKS FROM LONDON—IMPROVED JULY PROFITS—IMPROVING OUTLOOK.

The amount of business in small descriptions during the week has been extraordinary. London has continued a consistent seller, but every share offered has been snapped up with prices rising against the heavy selling. Local speculators have been encouraged to buy in view of the excellent profits that will be declared for July, together with the knowledge of the fact that increased efficiency is noticeable in every direction, both on the mines and at the head offices. This is perhaps the most important factor in our mining industry and will do more to resuscitate hitherto derelict propositions than anything else, except the most important feature of a mining company, which, of course, is dwts. We are looking for signs of a cessation of London selling and we hope this is not far distant. The July profits should not only help to discourage sellers but should create confidence and bring new buyers to our market.

On returns and development, Village Deeps, Main Reefs, Durban Deeps, East Rands, and Aurora Wests should see higher levels.

	Fri. 28th.	Sat. 29th.	Mon. 31st.	Tues. 1st.	Wed. 2nd.	Thurs. 3rd.
Anglo-Amer. Corp.	21 6*	21 9	21 9	21 9*	21 6	21 3
Apex Mines	—	6 6*	6 9*	6 9*	—	—
Aurora Wests	4 6		4 9	5 9	5 0*	
Brakpan Mines	—	—	—		50 6*	52 0
British South Africa	16 0*	16 0*	—	15 3†	—	
Bushveld Tins	—	—	0 6*	—	0 6*	0 6*
Cinderella Cons.	2 7*	2 6*	2 6*	2 10½	3 0	3 1
City and Suburban	2 2*		—	2 3*	2 4*	
City Deeps	50 0†	49 3	50 3	51 0	52 6	52 0*
Clydesdale Collieries		19 6†	—	19 6†	19 6†	—
Con. Diamonds	16 0	15 9	15 9	15 6	15 6	15 6
Con. Langlaagtes	15 0*	15 0*	15 3*	14 6*	14 9*	—
Con. Main Reefs	12 9	12 9	13 6	14 9	13 3	14 6
Con. Mines Selection	—		14 0*	14 6†	14 6†	—
Cor. Collieries	34 6*		34 6*		34 0*	34 0*
Cor. Freeholds	0 9*	0 9	—	0 9*	0 9*	0 9*
Cor. Syndicates	4 3*	4 3*	4 0*	4 3*	4 3*	5 0
Crown Diamonds	6 0*	6 0*	6 0*	6 0*	6 0	6 0*
Crown Mines	45 6*	45 6*	46 0*	45 6*	48 0	48 0*
Daggafontein Mines	3 2	3 1*	3 5	3 10	3 8	
East Rand Coals	—	1 4*	1 6*	1 7*	1 11*	2 2
East Rand Deeps	—	0 9*	0 9*	0 9*	0 9*	0 9*
East Rand Minings			11 0†	11 0†		
East Rand Props.	9 1½	9 1	9 9	9 10½	9 6*	11 0
Eastern Golds	—	0 6*	—	0 6*	0 6	—
Frank Smith Dia.	3 6*	3 6*	3 8	3 7*	3 9	3 8
Geduld Props.	65 3*	65 0*	64 6*	64 9*	65 6†	65 3
Geldenhuis Deeps	—	—	—	—	—	5 0
Glynn's Lydenburgs	—	14 0*	—	—	18 0†	14 0*
Govt. Areas	98 0	97 6	98 6	99 6*	99 0	98 9*
Hume Pipes	15 6	12 9*	12 9*	13 0	13 0†	12 6
Knight Centrals	4 3*	4 5	4 3*	4 4*	4 4*	4 6
Lace Props.	9 0*	9 0*	10 0	9 9*	9 6*	9 10*
Leeuwpoort Tins	—	7 0	7 0	6 6*	6 3*	6 3
Luipaardsvlei Ests.	—	—	—	1 0*	—	1 0*
Lydenburg Farms	3 8	4 0†	4 0†	4 0†	3 6*	
Meyer and Charltons	65 0*	70 0†	70 0†	70 0†	70 0†	70 0†
Middelvlei Estates	1 3*	1 6*	1 6*	1 7*	1 6*	1 7*
Modder B's	34 9*	34 6	35 0	34 0	34 0	33 9
Modder Deeps	44 3	44 6	44 9	44 6	44 0	44 0
Modder Easts	7 9	7 7*	8 0	8 7	8 7½	8 6
Natal Nav. Coll.	27 6*	—	28 6*			29 0†
National Banks	£11†		£10¼†		£11†	
New Eland Diam.	31 6*	33 0*	33 0*		35 0†	—
New Era Cons.	6 9	—	7 0†	6 6*	6 9	6 9
New Geduld Deeps	1 6*					1 6*
New Kleinfonteins	8 0	8 0	8 6	8 6	8 3*	8 3
New Modders	78 6	78 6	78 6	76 3*	76 9	—
New Primrose	4 6*	4 6*	—	4 6*	4 6*	
New Unifieds			4 6†	3 6*	3 9*	—
New State Areas	33 3	33 0	33 0	33 0*	33 3	33 3
Nigels	5 0*	4 9*	6 6†		6 6†	—
Nourse Mines	16 9	16 6*	16 9	16 6	16 10½	16 10*
Pretoria Cements	45 6*	45 6	45 3*	45 6*	45 6	45 3*
Rand Collieries	—	—	—	1 0*	—	—
Rand Nucleus	1 1*	1 1*			1 2	1 1*
Rand. Central	—	12 6†	12 0*	12 0	11 0*	12 9
Rand. Estates	19 10½	19 9	20 0	20 0	19 9	20 3
Rouxville Daimonds.	1 0*	1 3*	—	1 3*	1 3*	1 6
Roberts Victors	—	—	—	8 6†	8 6†	8 6†
Rooibergs	3 3*	3 0*	3 0*	3 1*	3 6	3 0*
Ryan Nigels	—	—	—	—	3 8*	—
Rose Deeps	12 9*	—	14 0*	—	13 6*	—
Simmer and Jacks	3 11	3 10*	3 11	4 0	4 1	4 1
S.A. Breweries	25 6*	25 6*	25 6*	—		25 0*
S.A. Lands	4 2	4 8	4 7*	5 0	5 6	5 5
Springs Mines	47 6	47 3	47 0*	47 0	45 9	46 6
Sub-Nigels	12 0		12 7½	12 9*	13 3	13 6
Swaziland Tins	5 6*	5 6*	5 0*		6 0	5 9*
S.A. Alkali	15 6*	16 0	15 9	15 6*	15 9*	15 9*
S.A. Townships	9 6*	9 6*	9 9	9 0*	9 9*	9 9*
Transvaal Lands	15 0†	—	15 0†	—	15 0	14 9†
Trans. G.M. Estates	13 9	14 9	15 9	14 9	14 6*	14 6*
Transvaal Silvers	14 1½	14 0*	14 0*	13 6*	14 3	14 3
Tudors	—	—	0 6*	0 7*	—	0 6*
Van Dyk	—	—	—	0 9*	—	0 9*
Van Ryn Deeps	68 6*	68 3*	68 6*	69 3	69 0	69 0
Village Deeps	12 6*	12 6*	13 6	14 6	13 6	
West Springs	14 10	14 9	14 7½	14 4*	14 4½	14 3
West Rand Cons.	—	—	5 3	6 0†	5 0	5 0
West. Rand Estates	3 11*	4 3	4 6	5 0	5 3	5 3
Witbank Colls.	37 0*	37 0*	37 0*	37 6*	37 6*	40 0†
Witwatersrands	11 6*	13 0*	15 6	16 6*	16 3	16 3
Wit. Deeps.	16 9	16 9	18 6	18 6	18 0	18 0
Zaaiplaats Tins.	1 9*	2 1*	2 0*	2 3*	2 3*	2 3
Union 5 per cent.	£103¼†	£101¼*	£101¼*	£101¼*	£101¼*	£101¼

* Buyers. † Sellers.

Share Values.

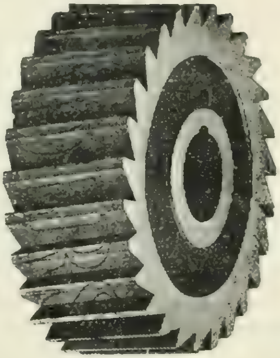
The "Share Valuation List on Rand Mining" by Alfred Lewis, last May, has been widely quoted abroad, and has been a remarkable forecast so far. The next issue should be very interesting.

OSBORN'S
STEEL PRODUCTS.
THE VERY NAME
OSBORN
GIVES THE
IMPRESSION OF
HIGH GRADE
MATERIAL.
A PRODUCT
OF QUALITY.

We Solicit Your Enquiries.

SAMUEL OSBORN
(S.A.), LTD.
'Phone 4673 Box 3162
JOHANNESBURG.
WORKS: . . CLYDE STEEL WORKS, SHEFFIELD.

"SaBeN"
MILLING
CUTTERS



LIKE ALL OF SANDERSON BROS. & NEWBOULD'S PRODUCTS "SaBeN" MILLING CUTTERS ARE MADE TO MAKE GOOD——THEY STAND FOR HIGHER EFFICIENCY AT LOWER ULTIMATE COST. WE CAN SUPPLY THESE QUALITY CUTTERS FROM STOCK.

SOLE SOUTH AFRICAN AGENTS:
BARTLE & CO., LTD.
LOVEDAY HOUSE. Phones 3553. Box 2466. Wires: "FAGGOT.'
JOHANNESBURG
And at KIMBERLEY and DURBAN.

CARBIDE
——ALL SIZES——
IN 1, 5, 10, 50 lb. TINS
and 100 lb. DRUMS

Apply: MANAGER,
RAND CARBIDE, LTD.,
SOUTH GERMISTON.
'Phone 252 Germiston.

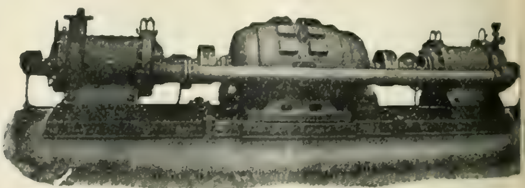
Telegrams: "NIVONIA," Johannesburg.
'Phones: 2196,—2197,—2198

J. & R. NIVEN, Ltd.,
ENGINEERS,
CONTRACTORS,
MERCHANTS.

BALATA BELTING
JAMES DAWSON & SON, Ltd.
BITUMEN SHEETING
GEO. M. CALLENDER & CO., Ltd.
BOILERS
PENMAN & CO., Ltd.
COAL CUTTERS AND CONVEYORS
JEFFREY MANUFACTURING CO.
COLLIERY PLANT
CAMPBELL, BINNIE, REID & CO.
DRILL STEEL
JOHN NICHOLSON & SONS, Ltd.
ENGINES, LOCOMOTIVES
ANDREW BARCLAY, SONS & CO., Ltd.
ELECTRIC LIFTS
A. & P. STEVEN, GLASGOW.
CRANES
BUTTERS BROS., GLASGOW.
HOSE, VALVES, SHEET RUBBER
THE LEYLAND & BIRMINGHAM RUBBER CO., Ltd.
LUBRICANTS
THOS. HINSHELWOOD & CO., Ltd
STEEL SCREENING
THOS. LOCKER & CO., Ltd.

Barsdorf's Buildings, Marshall Street,
JOHANNESBURG.

SULZER
HIGH-LIFT CENTRIFUGAL
PUMPS.
For Mine Drainage, Waterworks, Etc.



Pumping Set suitable for lift of 2,500 ft.

LARGE LOCAL STOCKS IN
MEDIUM AND LOW-LIFT PUMPS.

For particulars apply to:
RICE, WILSON & HERD,
86, 87, 88, 96, Standard Bank Chambers, Commissioner St.
P.O. Box 930 Telephones 2299 & 2300. JOHANNESBURG.
Also South African Agents for
CALLENDER'S CABLE & CONSTRUCTION CO., LTD.
BRITISH THOMSON-HOUSTON CO., LTD., etc., etc.

Corner House Mines.

A QUARTER'S PROGRESS.

The following figures are for the three months ending June 30:—

Consolidated Main Reef.

Tons crushed, 125,200; tonnage mined, 140,267 tons; total yield, 44,760 oz. fine; total yield per ton, 7·151 dwt.; working revenue, £202,150, per ton milled, £1 12s. 4d.; working costs, £187,179; per ton milled, £1 9s. 11d.; working profit, £14,971; per ton milled, 2s. 5d. Amount received during current year above the monthly valuation placed on gold in respect of sales realised up to March 31, 1922, £4,326; total working profit, £19,297; sundry revenue, £3,664; total profit, £22,961. The working revenue above mentioned, viz., £202,150, is arrived at by calculating the gold produced at the following prices:—April, £4 10s. 3d. per fine oz.; May, £4 10s. 3d. per fine oz.; June, £4 10s. 9d. per fine oz., which allow for the cost of realising the gold. Development and mining operations are now proceeding normally.

Geldenhuis Deep.

Tons crushed, 139,188; tonnage mined, including tributors, 150,527 tons; total yield, 35,133 oz. fine; total yield per ton, 5·048 dwt.; working costs, £161,605; per ton milled, £1 3s. 2d.; working revenue, £158,568; per ton milled, £1 2s. 9d.; working loss, £3,037; per ton milled, 5d.; sundry expenditure, £378; total loss, £3,415. The working revenue above-mentioned, viz., £158,568, is arrived at by calculating the gold produced at the following prices: April £4 10s. 3d. per fine oz.; May, £4 10s. 3d. per fine oz.; June, £4 10s. 9d. per fine oz., which allow for the cost of realising the gold. The working loss sustained during the quarter was due to a shortage of native labour in the month of April, which restricted operations, and also to a fall in the grade of ore milled. The losses made during the half year precluded the payment of a dividend for that period.

Robinson Gold Mining Co.

Tons crushed, 39,500; tonnage mined, 49,900 tons; total yield, 13,945 oz. fine; total yield per ton, 7·061 dwt. Working revenue, £63,048; per ton milled, £1 11s. 1d.; working costs, £49,240; per ton milled, £1 4s. 11d.; working profit, £13,808; per ton milled, 7s.; sundry revenue, £1,579; total profit, £15,387. The working revenue above-mentioned, viz., £63,048, is arrived at by calculating the gold produced at the following prices:—April, £4 10s. 3d. per fine oz.; May, £4 10s. 3d. per fine oz.; June, £4 10s. 9d. per fine oz., which allow for the cost of realising the gold. The altered system of working on a reduced scale is being attended with success.

Rose Deep.

Tons crushed, 128,800; tonnage mined, 140,659 tons; total yield, 32,987 oz. fine; total yield per ton, 5·122 dwt. produced at the following prices:—April, £4 10s. 3d. per fine oz.; May, £4 10s. 3d.; per fine oz.; June, £4 10s. 9d. tioned, viz., £149,162, is arrived at by calculating the gold Working revenue, £149,162; per ton milled, £1 3s. 2d.; working costs, £128,818; per ton milled, £1; working profit, £20,344; per ton milled, 3s. 2d.; sundry expenditure, £90; total profit, £20,254. The working revenue above-men- per fine oz., which allow for the cost of realising the gold. A full native labour supply has now been obtained. A dividend, No. 42, of 5 per cent. was declared on June 19, 1922, for the period ending June 30, 1922, and will be payable from the head and London offices to all shareholders registered on the company's books at June 30, 1922. Holders of share warrants will receive payment of coupon No. 42, attached thereto, on presentation at the London office, or at the Credit Mobilier Français, 30 and 32 Rue Taitbout, Paris.

Transvaal G.M. Estates.

Development footage, 18,864 feet; tons milled, 46,840. Working profit for the quarter: Central Mines, loss, £990; per ton milled, loss, 7d.; Elandsdrift Mine, £3,134; per ton milled, 12s.; Vaalhoek Mine, loss, £631; per ton milled, loss, 2s. 3d.—£1,513. Sundry revenue and interest, less general expenses, £547; net profit, £2,060. The working profit is based on an average net realisation of £4 10s. 2d. per fine oz. of gold. Native labour was abundant, and advantage was taken of it to intensify activity in development and prospecting.

New Modderfontein.

The payable reef disclosures at the New Modderfontein during the quarter were as follow: Main Reef Leader, 1,270 feet; width, 15 inches; value, 51·3 dwts.; total profit, £302,336. Mining operations were restricted during the first half of the quarter owing to shortage of native labour, but are now again proceeding normally.

Village Deep.

The payable reef disclosures were as follow: Main Reef Leader, 1,292 feet; width, 22 inches; value, 14·6 dwts.; total profit, £37,032. Mining and development operations are proceeding normally.

Modderfontein B.

The payable reef disclosures were as follow: Main Reef Leader, 1,315 feet; width, 17 inches; value, 37·4 dwts.; total profit, £190,897. The native labour shortage at the beginning of the quarter was made up rapidly, and mining and development operations are now proceeding normally. Hoisting from the south-west shaft has commenced, and the new surface haulage to the central shaft is now operating.

City Deep.

The payable reef disclosures were as follow: Main Reef Leader, 2,510 feet; width, 23·3 inches; value, 19·5 dwts.; South Reef, 200 feet; width, 34·4 inches; value, 14·2 dwts.; total profit, £134,879. Development and mining operations are again proceeding normally.

The Half Year's Gold Returns.

During the half year ended June 30th, 1922, the Transvaal gold mines milled 6,856,647 tons of ore, which yielded 2,456,549 fine ounces of gold (6.948 dwts. per ton). The declared working revenue was £11,081,400 (31s. 9d. per ton), while the working costs totalled £10,132,487 (23s. 4d. per ton). The declared estimated working profit for the period was £948,913 (8s. 5d. per ton). The totals for the Witwatersrand are as follows: Tons milled, 6,694,806; gold won, 2,358,925 ounces (6.918 dwts. per ton); working revenue, £10,756,785 (31s. 7d. per ton); working costs, £9,840,345 (23s. 1d. per ton); working profit, £916,440 (8s. 6d. per ton). Following are the monthly figures: January, February and March, tons milled, 1,697,978; yield per ton, 7.271 dwts. (the operations for the three months resulted in a loss of £1,224,675). April: tons milled, 1,444,679; yield per ton, 6,915 dwts.; revenue per ton, 31s. 9d.; costs per ton, 24s. 5d.; profit per ton, 7s. 4d. May: tons milled, 1,801,419; yield per ton, 6.878 dwts.; revenue per ton, 31s. 6d.; costs per ton, 22s. 11d.; profit per ton, 8s. 7d. June: tons milled, 1,912,571; yield per ton, 6.956 dwts.; revenue per ton, 31s. 11d.; costs per ton, 22s. 10d.; profit per ton, 9s. 1d.

New Kleinfontein.

At the New Kleinfontein during the quarter the number of feet driven, risen and sunk, excluding boxholes, was 873 feet; footage sampled, 710 feet; footage sampled (payable), 335 feet; mining width (payable), 56 inches; assay value (payable), 6·75 dwts. The operations for the quarter resulted in a working loss of £358 12s. 10d.

The South African Mining *and* Engineering Journal Year Book

for 1922-1923

will be a

£1,000,000,000 Special Number

It is to be issued towards the end of 1922 in celebration of the achievement of production of minerals to the aggregate value of one thousand million pounds sterling. It will be a complete illustrated work containing all facts and figures relating to the South African mining industry, its statistics, technology and trade. It will be replete with valuable maps, diagrams, mine plans and statistical annexures, compiled by experts.

In 20 parts complete in one large and handsomely produced volume.

Summary of Contents

Part I.—The Gold Mines of the Witwatersrand. Historical—Outlines of Geology.

Part II.—Witwatersrand (continued). Evolution of Technical Practice Underground and at Surface.

Part III.—Witwatersrand (continued). Economies—Labour Questions, etc.

Part IV.—Other Gold Fields of the Union. Lydenburg. Barberton. Zoutpansberg, Heidelberg, Klerksdorp, etc.

Part V.—The Diamond Fields of the Union of South Africa and the S.-W.A. Protectorate.

Part VI.—Diamond Fields (continued). Technical Practice, Economics, Alluvial Diggings, South-West African Fields.

Part VII.—The Coal Industry of South Africa, with Maps, Statistics, etc., etc. Coal Mining Machinery, Coal Cutters, Hoisting and Hauling Machinery, Electrical Power Plants, Coal Washing and Sorting Plants. By-Products Plants. Outlines of History and Geology.

Part VIII.—Coal Industry (continued). Technical Practice, Outputs and Analyses, Trade [illegible].

Part IX.—The Iron and Steel Industry.

Part X.—Base Metals, etc. Copper, Tin, Asbestos, Lead and Argentiferous Galena, Mica, Corundum, Talc, Sulphur, etc.

Part XI.—The Gold Mines of Rhodesia. History and Geology. Technology—The Large and Small Producers. Liberal Mining Laws.

Part XII.—Other Minerals of the B.S.A. Company's Territories. Coal, Asbestos, Chrome Iron Ore, Mica, Northern Rhodesia's Minerals.

Part XIII.—The Great Katanga Copper Belt. Copper, Tin, and Gold. History, Geology, Technology, Statistics and Trade.

Part XIV.—The Congo Diamond Fields.

Part XV.—Mineral Fields of East Africa. Gold, Coal, Tin and Copper in Mozambique.

Part XVI.—Oil and Oil Shale Fields of Southern Africa.

Part XVII.—Statistics of Production. Dividends, etc. Share Market Prices.

Part XVIII.—Who's Who in the Mining Industry.

Part XIX.—Industries subsidiary to Mining. The principal Engineering Works and Foundries of the Union and Rhodesia. Explosives and Chemical Works, Cement and Pipe Works described and illustrated, etc., etc.

Part XX.—Railways and Harbours. Marine Engineering Works. The Port of Durban. Natal's great Harbour. One of the best equipped and most accessible Ports on the East Coast.

The Port of Lourenço Marques. The Transvaal's Gateway. The shortest and quickest route to the Rand.

The Port of Beira. The natural Port for the Mozambique Companies' territories, Northern and Southern Rhodesia, Belgian Katanga, Nyassaland Protectorate and the Zambesi Valley.

ADVERTISING SPACES——

are available in all sections

Write for full particulars to Box 963, or Phone 913, Johannesburg, and our representative will call.

HEAD OFFICE:—

176-180 Stock Exchange Buildings

JOHANNESBURG

TRADE AND INDUSTRIES SECTION.

Week in the Mining Material and Engineering Trades.

BUSINESS DULL, BUT CONFIDENCE IN EARLY IMPROVEMENT UNABATED—IRON AND STEEL—HERE, IN BRITAIN, FRANCE AND SWEDEN—ELECTRICAL GOODS—RAND'S ELECTRIC SUPPLY DEVELOPMENT—TIMBER AND BUILDING MATERIALS—COAL POSITION IN BRITAIN AND AMERICA —OIL—VAAL RIVER WATER SCHEME—WIRELESS—FINANCIAL—METAL MARKET.

General.

It would be absurd, said an influential merchant this week, to ignore the fact that things at the moment are dull —deadly dull—and that the community may have to face a continuation of the present state of inactivity—perhaps indeed an accentuation of this trying period—for some little time to come. He said further that the opinion had been expressed to him by a very prominent merchant that the mines, apart from absolutely requisite requirements, had evidently decided to refrain from purchasing materials and stores until the beginning of next year. His informant had stated in support of his opinion that the industry had now got wages down to a level at which fair and reasonable profits could be made; production was being increased to the greatest possible extent, and abstention from large purchases during the next six months would enable many of the gold mining companies to declare good dividends for the second half of 1922—thus increasing the value of their shares and enhancing their chances of securing further capital for increased exploitation of their properties. With this object in view, such a policy on the part of the mines to get a good margin on the right side, however detrimental to the mercantile community, just now and for a period to be reckoned possibly by months, was understandable.

Another big importer said that in his opinion the mines were now going in for a scheme of big development. This, however, could not be carried out, he thought, without a big increase in the labour supply.

An important and observant commercial man whom we interviewed this week, while admitting the present stagnation in business activities which he too thought might be prolonged for some time longer, was still very optimistic as to the future and not too far-flung future of business conditions here. There had, he said, been grumblings of late at the mines not putting up their usual lists of requirements in the Commercial Exchange. The present new month might, he thought, tell a different tale. At present, of course, the question was when are things going ahead? At the moment, and, of course, for months past, merchants had felt the pinch of restricted business very much indeed. The banks, contrary to previous predictions, are to-day more stringent than ever they were with a certain class of merchants, who, although *au fond* quite sound, at the moment suffering, as most of the community, from want of ready money. The absence of suitable financial facilities was making it extremely difficult for these merchants to win out, and there was no doubt in his mind that there was going to be a very trying time for most of them during the next two or three months until betterment came, as it undoubtedly will. Everybody, he said, quite sees that a better time is coming for this country; in fact, many people consider that we are eventually going to have one of the best " spots " in business we have had for many years; but the tussle to bridge the intervening time is bound to be a very severe one. He thought we were going to have a gradual improvement in conditions—not a runaway, but a steady advance all along the line. Present indications seem to point to all classes of the community sharing in the better conditions coming along, from the farmers right down to the merchants.

The departure of Sir George Buchanan, the harbour, dock and river works specialist, from London yesterday, with the mandate from the Union Government to report upon harbour developments in South Africa, specially with reference to Kosi Bay, was a pledge, he thought, that the Government were in earnest regarding harbour and railway development in the Union. In conclusion, he said that although we were going through most trying times, which meant for the majority hanging on to the best of their ability for the next two or three months, indications of improvement in business conditions were undoubted, of which the state of the share and property markets—no uncertain barometer—was proof positive.

Prices of materials remain much about the same, but timber merchants are looking forward with eagerness to new supplies within the next four to six weeks. The Union is at the moment denuded of deals, and building contractors find difficulty in getting material suitable to high-class joinery work. It is realised, however, that it is merely waiting for a few weeks when merchants will be well supplied with new season's timber, when things in the building trade in respect of timber should forge ahead again.

The gold mining companies' returns for last month, so far announced, show a gratifying advance in respect of profits made, and confirm the hopes already expressed of satisfactory dividend declarations at the end of the present year.

Pari passu, it is no less pleasing to note that distress on the Rand is gradually decreasing.

The terms of the proposed absorption of Rhodesia into the Union of South Africa have been carefully noted and discussed by the community, by whom the provisional agreement, which was unanimously carried by the shareholders of the Chartered Company on July 28, finds general acceptance.

The fly in the ointment as regards the world's stabilisation is, of course, the sensational fall this week in the German mark of nearly 1,000 points, bringing it down to about 3,000 to the £. This debacle in the mark appears to have been caused by the Imperial Bank of Germany (the Reichsbank) raising the rate of discount from 5 per cent. to 6 per cent., noting the first change in the German bank rate since December 23, 1914.

The commercial community is naturally greatly interested in the movement now afoot to provide some sort of machinery for the settlement of disputes in the mining industry by conciliatory methods, and the result of this much-wished-for desideratum is eagerly looked forward to.

Iron and Steel.

Apart from the usual end and beginning of the month flutter, business generally has been exceedingly quiet this week. The mines, an influential merchant said, are practising an economy in purchases previously unknown in the history of Johannesburg, but although slow—very slow as a matter of fact—he was not dissatisfied with the nature of the business now being done, and, as oft times iterated, he was very optimistic as to the future trend of business.

Latest Local Quotations.—Dunswart iron, 18s. to 23s. per 100 lb. Union Steel Corporation, Limited, 19s. to 22s. 6d. Imported iron and steel, flats, rounds and squares, from 25s. 6d. to 35s.; channels and joists, 25s. to 28s.; imported angles, 27s. to 31s. 6d.; tee iron, 27s. 6d.; shafting, ⅜ in. down to 3-16 in., 7½d. to 9d.

... ¼ to 1½ in., 6½d.; 1¼ in. to 6 in., 4½d.; steel plates, 1-16, 3-16, 1s. 9d. to 21s. 6d.; 10 x 5 and larger, 25s.; ¼ to ½, 25s. 6d.; spring steel, 7d. to 8½d. lb.; bolts and nuts, hexagon, ⅜, 7 5-16d. lb.; ½ in., ⅝ and ¾, 33s. 6d. to 47s. 6d. per 100 lb.; hexagon nuts, ¾, 8½d.; ½ in., ⅝ and ¾, 7½d.; fish plate bolts and nuts, ¾ in., 6d. lb.; ⅝ in., 4d. to 4½d.; ⅝ in. and ¾ in., 3½d.; dog spikes, 32s. 6d. per 100 lb.; rivets, ⅜ in., 6 5-16d.; ½ in., 5d.; ⅝ in. and ¾ in., 37s. 6d. to 40s. per 100 lb.; ⅜ in., 50s.; brass rods, ¼ in., 1s. 3d.; ⅜ in., 1s. 6d.; ½ in., 1s.; hexagon brass rods, 1d. to extra; copper rods, ¼ in., 1s. 9d.; ½ in., 1s. 10d.; ⅝ and upwards, 1s. 9d. lb.; tool steel, 2s. 11d. to 3s. 3d.; brass sheets, 1s. 10d. to 2s. lb.; copper sheets, ¼ in. to 18 gauge, 1s 10d. lb.; 20 gauge, 1s. 11d.; 22 gauge to 28 gauge, 2s. lb.; firebox copper, 2s. 1d. lb.; copper tubes, ¼ in., 3s.; ⅜ to ½ in., 2s. 4d.; ¾ to 4½ in., from 2s. to 2s. 2d. lb.; phosphor tin, 2s. 7d.; ingot tin (Lamb & Flag), 1s. 9d. lb.; ingot lead £28 per ton; drill steel, 5½d.; hollow, 7d. to 8d.; 1¼ in., 6½d. to 8d.; wire nails, 30s. to 35s.; shovels, 27s. 6d. to 46s. 6d. doz.; wheelbarrows, 40s.; picks, 35s. to 40s.; pick handles, 26s. to 30s.; hammer handles, 14 in., 4s. 10d. to 5s.; 18 in., 7s.; 24 in., 8s. 6d. to 10s. 6d.; 30 in., 15s. to 18s.; 36 in., 30s.; piping, ¾ in., black, 4¾d.; 1 in., 5¾d.; 2 in., 1s. 1d.; galvanised, ¾ in., 5d.; 1 in., 7¾d.; 2 in, 1s. 7d.; ¾ in. steam, 5¾d.; 1 in., 8d.; 2 in., 1s. 6d.; barbed wire, "Snorthorn," 69 lb., 13⅜ gauge, 19s. 6d. to 21s. per coil; plain galvanised fencing wires, No. 8 gauge, 100 lb. coils, 21s. 6d. per coil; No. 10 gauge, 100 lb. coils, 24s. 6d. per coil; No. 12 gauge, 100 lb. coils, 26s. 6d. per coil; bulb tee fencing standards, 14 lb., 19s. 6d. per dozen; 12 lb., 23s. 6d. per dozen; black baling wire, 14 gauge, 19s. per coil, 100 lb.; 12 gauge barbed wire, 22s. per coil, 96 lb.; plain wire, No. 8 galvanised, 21s. per coil, 100 lb.; fencing standards, 21s. for 12's and 24s. for 11's; droppers, 40s. per 100; screening, 3s. to 9s. 6d. per square yard; cyanide, 1s. 6d.; zinc shavings, 1s. per lb.

British Iron and Steel Conditions and Prices.

Reports from Britain state that competition for the Scottish trade is developing. Midland iron is about 84s. f.o.b. at Birmingham; Cleveland, f.o.b. Grangemouth 96s. 8d., or 90s. f.o.t. Middlesborough. Export trade with the United States is heavy both for special iron and foundry iron. Germany, too, is dealing steadily in East Coast hematite. Thus on the whole the output of the dozen blast furnaces producing East Coast hematite is fairly well absorbed, and it is hoped to start two more shortly. No. 1 Cleveland foundry iron is scarce owing to persistent inquiry from abroad; very little is being produced, and the output for weeks ahead has been sold forward. Transactions for the third quarter of the year have been put through on the basis of 95s. per ton, other numbers at 96s. for No. 1, but for prompt delivery it is still possible to do business at 2s. per ton below those figures. No attempt has been made to exploit the scarcity of No. 1. Foundry iron is still quoted at 95s. per ton, whilst No. 3 Cleveland G.M.B. is offered at 90s., No. 4 foundry iorn at 87s. 6d., No. 4 forge, 85s.; and mottled and white, 80s. per ton f.o.t. or f.o.b.

The fuel market has developed rather a firmer tendency. It is stated that the demand for good Durham blast furnace coke rather exceeds the supply, and as a result sellers at 26s. 6d. per ton delivered at the works are scarce, 27s. being now nearer the mark. Prices of medium steel bullets, £8 5s.; hard ditto, £8 15s.; soft ditto, £7 15s.; common iron bars, £12; steel boiler plates, £13 10s.; steel ship, bridge and tank plates, £10; steel angles, £9 10s.; steel joists, £10; steel tees, £10 10s.; flats, 5 in. and upwards, £10; heavy steel rails, £9 10s.; fish plates, £14 10s.; iron and ship rivets, £16; black sheets, £13 15s.; galvanised corrugated sheets (24 in. gauge), £16.

Tin Plates and Sheets.—The tin plate market is steady, with quite a lot of inquiry. August-September plates are ruling at 19s. 6d. Current quotations for coke tins: 1 C., 14 by 20 (112 sheets, 108 lb.), 19s. 6d. to 19s. 9d. per box; 1 C., 28 x 20 (112 sheets, 216 lb.), 39s. 3d. to 40s. per box; 1 C., 14 x 18¾ (124 sheets, 110 lb.), 19s. 9d. to 20s. per box; 1 C., 20 x 10 (225 sheets, 156 lb.), 28s. to 28s. 6d. per box; 1 C., squares and odd sizes, 19s. 9d. to 20s. basis—all cash f.o.b. Wales. The demand for large sheets shows very little improvement, quotations are steady at £12 to £12 5s. per ton basis for mild steel, and £15 15s. per ton for galvanised corrugated, net f.o.b.

New French Duties on Iron and Steel Imports.

La Metallurgie, referring to the question of French import duties, gives the statement by the President (M. Dufour) of the Syndicat Général de Fondeurs, summarising the objections raised to the proposed increases by the French foundries and other consumers. As previously mentioned, the co-efficient for hematite pig iron and spiegel is to be raised from 2 to 2.5, other products being affected being raw iron and steel ingots, fine tool steel, special high tension steel, cold-rolled hoops, special rolled steel, cut sheets. No increases are proposed for other classes of products, and in the case of hot-rolled hoops and ordinary pig iron the co-efficient is to be reduced from 2 to 1.8. The proposals were welcomed by heavy iron and steel producers, but are regarded somewhat differently by the consumers of the raw product, who are afraid of not obtaining supplies abroad and of being left at the mercy of the French producers in the event of any shortage. Particular objection is taken to the proposed reduction of duty on ordinary pig iron, which is produced abundantly in France. Will the raising of the co-efficient for the special pig iron—pig iron which the malleable works are obliged to import from England and Sweden on account of the limited supplies produced in France—prove of benefit? The President does not believe that raising the import tariff can materially improve the position of the heavy metal industry, partly on account of France's enormously increased productive capacity coupled with the reduced demand and the absence of Government contracts for public works. It is pointed out that with the capacity of 12,000,000 tons the French blast furnaces and steel works did not produce more than 3,000,000 tons in 1921, and it is asked whether anyone believes that the French home market is capable of absorbing such a large balance? Even if the Customs barrier were entirely closed, the result would only be a slight increase in the sale of pig iron and raw steel in France. It would be far better, M. Dufour said, for the producers to turn their serious attention to the foreign markets, and in order to assist them the Government ought at once to abandon their present system of coke rationing.

Swedish Iron Ore and British Markets.

Speeches made at the Iron and Steel Institute, says the Swedish *Dagbladet*, indicate the probability that Sweden will occupy a more important position than hitherto as a supplier of ore to the British Isles. Sweden, says the paper, can undoubtedly supply sufficient good ore of equable quality from Northern and Middle Sweden. This ore is very suitable for British furnaces, but the transport costs at present are too great added to the Swedish railway rates.

The following is an interesting comparison, according to the *British Industrial Year Book*, between the average in 1913 and the highest and lowest price in 1921 of the following articles:—

		1921.	
	1913.	Highest.	Lowest.
Tin, ton	£200½	£174	£156
Copper, ton	£85	£124	£98
Deal, 3 x 9, std. ...	£15	£58	£35
Galv. Sheets, ton ...	£11.7	£28	£17.10

Electrical Goods.

There is not much change to report in this section, said a prominent dealer this week. Stocks are good, with the exception of ordinary lamps, which are scarce and likely to become more so in the near future. There has, as a matter of fact, been a run on lamps lately. The dealer referred to recently received a consignment of 10,000, the half of which he disposed of the day they arrived. Some 100,000 of these are, however, now on the way out, and the present rather acute shortage is not likely, therefore, to last very long. Stocks generally are coming in satisfactorily. Town business is very fair, as are also country inquiries and orders and demands from farther afield—Rhodesia, Katanga, etc. No alterations in prices have taken place locally, nor have any been announced from overseas.

Johannesburg's Electric Supply Department.

A new central sub-station has been built at the corner of Eloff and Anderson Streets, the plant for which has been transferred from the power station and enlarged to meet the increased supply requirements. Provision has been made for installing four converting sets with a total capacity of 6,500 kilowatts in the present station, which can be extended to nearly twice its present dimensions when required in the future. The position of the new sub-station in respect of the town and its propinquity to the gold mines affords a handy centre of supply from the V.F.P. should such be required. The new sub-station is expected to effect great economies in the distribution of electric current, and will relieve the congestion presently existing in the engine room at the power station.

Timber and Building Materials.

Business in timber at present is quite good. Stocks, however, are getting very scarce, especially in 3 x 9 solids. New consignments are expected in September. The building trade is fairly active and gives promise of an early development.

Timber Prices.—3 x 9 deals, up to 18 teens 1s., over 18 teens, 1s. 1d.; scantlings, 10½d.; beaver boards, 4d.; floorings, 6d. to 6½d.; ceilings, 4¼d. to 4½d.; Oregon, 5s. 6d. a cube; pitch pine, 7s. 6d. to 8s.; corrugated iron, 7¾d. to 8¾d. Furniture timber: Burmah teak, 13s. per cube at coast; American oak, 1 in., 10½d.; 1½ in., 11d.; 2 in., 1s. at coast; Japanese oak, 11½d. at coast; West African mahogany, 1 in. to 4 in. thick, 27s. to 28s. per cube, at coast; Rhodesian mahogany, 9s. per cubic foot at mills; Honduras mahogany, 30s. per cubic foot; American yellow pine, 1s. 4d. per foot of 1 x 12 here; American pine shelving, 10d. per ft.; 3-ply wood, 3 m.m. up to 5 m.m., alder and birch, 4d. to 6½d. per sq. ft.; oak and teak, 3-ply, 10d. per sq. ft. Prices for bricks remain the same at: Klompje bricks, 25s. per 100 at works; fire-bricks, £10 per 1,000 at works; mixed, 70s.; wire-cuts, £4 10s. to £5; and £5 for pressed per 1,000, at kilns; columns from 20s. to 30s., according to size; roofing tiles, Marseilles, £25 per 1,000 at the works; chimney pots, 12 in., 7s. 6d.; 15 in., 9s.; 18 in., 10s. 6d.; dry red oxide, 16s. per 100 lbs.; white lime, 7s.; blue plaster lime, 5s. 3d.; blue lime, 4s. 3d.; cement, 10s. 3d. a bag; damp course and roofing, 36s. to 54s. for 1 to 3-ply.

Second-hand Iron and Timber.

At the moment time is being marked in the different iron and timber yards, business being extremely quiet. Second-hand iron, as was predicted a month ago, has a weakening tendency, and is selling at 5d. to 6d.; timber also has declined to 7d. and 8d. Stocks are scarce.

Blue Building and Plaster Lime.

Trade has shown a sl,ight improvement in this section on the Reef, but principally in Johannesburg, where quite a lot of building has been going on. Other centres have been slack, especially in the Free State. Business at the coast has slackened off as well, occasioned by the use of cheap imported cement for mortar purposes. Cement is less plastic than blue hydraulic lime, and not usually sought after for brickworks, but where it is procured very cheaply it is used in large quantities instead of blue lime.

Several master builders had interested themselves recently in a defunct lime works situated outside Krugersdorp and had intended putting a certain amount of capital into the concern. This step was not approved of by the majority of the master builders, who considered that, apart from putting lime manufacturers on their mettle and causing ill-feeling with the merchants, it was not altogether such a sound undertaking as it looked on paper. The idea of the master builders starting the lime works has now fallen to the ground, although there are one or two of them still very anxious to become lime manufacturers.

British Coal.

Orders continue to pour in for British coal from the United States. The Welsh miners are trying to stop supplies at the bidding of the Rhondda district of the South Wales Miners' Federation, with what result remains to be seen. It may be remembered that during the English coal strike last year the American miners refused to help the British miners, and steadily supplied coal for transport to Britain. It is roughly calculated that 1,000,000 tons of coal have been ordered in the Cardiff and Newcastle area for shipment to America. There has been a big jump in coal freights from South Wales to America. Last week 9s. a ton was accepted, but now 12s. 6d. and even 15s. is being asked.

Great activity is prevailing in the Cardiff coal market in consequence of the American demand, and the price of best coal has advanced 4s. to 28s. f.o.b. Anthracite coal is now quoted at 65s. per ton, which is a record price since the war.

Higher coal prices were urged at a meeting of the National Coal Board convened to consider the economic position of the industry. Employers have promised to consider a proposal by the Union leaders for a national fixing of prices at a level yielding better wages and profits. The industry is at present showing rapid improvement throughout the country on account of the flood of orders from America, Canada and the Continent. Germany during the past five months has taken 1,933,000 tons, together with a considerable proportion of the 1,935,000 tons shipped to the Netherlands. Nearly 1,400,000 tons have been shipped to the Argentine, Brazil and Uruguay.

American Coal Strike.

The American Government having failed to bring about a settlement of the strike, the Inter-State Commerce Commission has proclaimed the existence of a state of national emergency, and special measures for rationing and prevention of profiteering are now being enforced. This is to be followed by the Federal authorities assuming control of the railways. Attempts are being made to re-open a number of anthracite mines in Pennsylvania, to which troops are being despatched to protect non-unionists. Owing to the latest phase in the coal strike in the United States, large orders for coal are being placed in Britain from America, resulting in an average advance in prices of 7s. 6d. per ton on coal, while freights have risen 3s. during the past ten days.

Latest reports from America are that President Harding has introduced a scheme which the railway employers and workers will probably accept. Mr. Lewis, the strike leader, is of opinion that the result of the meeting, which was called for Tuesday last, will be the resumption of work within a month.

In the absence of his usual cable, now overdue, Mr. Stevenson, the businesslike and courteous American Trade Commissioner, in the course of a chat, said that in view of the present position in the United States, people here had been asking themselves whether there would be a market in America for South African coal as a result of the strike there. Unless the position becomes far more serious than it is to-day, he said, America can get sufficient supplies from British sources, and there does not appear to be a big prospect for South African coal in the United States to-day. However, it would seem that South Africa would benefit in that the strike is having the effect of raising the price of British coal, which will mean that in the near-by markets to which South Africa ships and with which it competes with Great Britain, the Union will get a better price for its coal.

Oil.

The reports of the Shell Transport and Trading Co., Ltd., for last year's trading show a profit of more than £5,500,000, and with the balance brought forward from last

HEAD, WRIGHTSON & CO. (South Africa), LTD.

P.O. Box 1034. JOHANNESBURG. 'Phone 3524

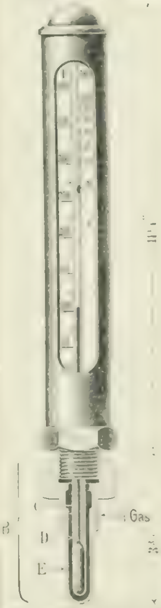
Specialists in COLLIERY PLANT · GOLD MINING PLANT
COAL WASHERS · CONYEYING PLANT, etc.
ALL CLASSES OF STRUCTURAL STEELWORK

COAL HANDLING SCREENING *and* WASHING PLANTS

Ask for Details of ......
"MARCUS" Screens
"NOTA NOS" Washers

DAVIS-MADE THERMOMETERS

JOHN DAVIS & SON (DERBY), LIMITED.



[illegible]

BRASS SHUTTER THERMOMETERS FOR AIR COMPRESSOR

[illegible]

CHEMICAL THERMOMETERS IN BRASS PROTECTING SHEATHS, STEM DIVIDED. TEMPERATURES UP TO 600° FAHR. CAN BE SUPPLIED IN THE FOLLOWING LENGTHS, 6, 8, 10, 12 OR 14 INCHES

PRICES AND FURTHER PARTICULARS WILL BE GLADLY SENT ON REQUEST.

Sole Agents for South Afr.

BARTLE & CO., LTD.

Loveday House 'Phone 3533. Wires, "Faggot."
P.O. BOX 2466, — JOHANNESBURG.
Box 444, KIMBERLEY and Box 1228 DURBAN.

DAVIS-MADE MEANS HIGHEST GRADE

VENUS

17 Blacklead Gradations
6B *(Softest)*
to
9H *(Hardest)*

6d. each

For Mining Engineers Draughtsmen *etc.*

Of all Stationers & Drawing Office Suppliers

PENCILS

J. ASCHHEIM, P.O. Box 3166 JOHANNESBURG.

year (£2,007,588) an available profit of £7,634,261. A further dividend of 3s. 6d. per share is proposed, making 27½ per cent., free of tax, for the year. This compares with last year's dividend of 35 per cent.

Rand Water Board—Vaal River Scheme.

A comparison of the figures of the quantity of water supplied by the Board to all its consumers (eight municipalities, the South African Railways, the Witwatersrand gold crushing and non-crushing mines) during June, 1921, and June, 1922, shows that whereas in June, 1921, approximately 331½ million gallons of water were sold at a cost of £18,701, in June of this year 328½ million gallons were sold, bringing in £17,124. The charges for water in the former period were 10d. per 1,000 gallons, and in the latter 9d. per 1,000 gallons.

The report of the Chief Engineer (Mr W. Ingham shows that the work at the barrage on the Vaal River is proceeding very satisfactorily. Seventeen barrage gates are now in position, and four have been balanced by the counterweights. One additional gate has been assembled and is ready to be moved into position on the pier. The whole of the operating gear has been delivered at the barrage site and 26 sets have been fixed on the top operating platform. The erection of the gates should be completed in September.

British Engineers and Shipbuilders.

A ballot taken by the Federation of Engineering and Shipbuilding Unions resulted in 32,000 votes as against 10,000 being cast for the acceptance of a reduction in war bonus. There will accordingly be no stoppage of work on this account.

Wireless.

The Post Office, London, have, it is understood, negotiated for the construction of a wireless station, working directly with South Africa, India and Australia, the initial cost of which will be £1,000,000, and the yearly maintenance £550,000. A site at Bourne, Lincolnshire, is now being provisionally inspected. The Leafield station will be retained to communicate with Egypt, Palestine, etc.

Signor Marconi, interviewed on his return to London from America, stated that in wireless telephony and broadcasting the United States were clearly ahead, but in wireless telegraphy Britain was still supreme.

America Planning Leviathan Liners.

New York reports that the Pennsylvania Railroad Company is planning, in the event of the passing of the Ship Subsidy Bill, to enter the Trans-Atlantic passenger trade, and negotiating for the building of two liners 1,000 ft. in length and with a speed of 30 knots. The present largest world's liner, the Majestic (German built) is 915 ft. long.

German Shipping Strike.

The shipping strike at Hamburg, which had extended to the engineers, and in consequence of which 300 ships lay idle, has now ended.

German Unemployed.

The number of unemployed in German has diminished to less than 20,000, which is below pre-war records.

London's Financial Outlook.

According to latest cable advices, opinion in financial circles there is that trade has shown further improvement. The end of the engineering strike has increased the prospect of improvement in business in the autumn. Prices of commodities have slightly advanced, but adverse influences are still at work preventing any big upward movement. The bank rate was reduced on July 13 from 3½ per cent. to 3 per cent., and money and discount rates have correspondingly given way. Short money since the decline in the bank rate has not been plentiful, but latterly the Treasury has assisted the market by buying short bills, making conditions easier. Wild fluctuations have taken place in foreign exchanges owing to constant rumours regarding the reparations question. The New York exchange has remained quite high in opposition to a generally expected decline, which is accounted for partly by the fact that the Treasury have commenced shipping gold to New York. With the lower bank rate, all gilt-edged securities have further advanced.

South African Reserve Bank.

The statement of the bank as at July 29 shows ratio of cash reserves to liabilities to the public at 78.6 per cent.

The Privy Council having dismissed the appeal of the Grand Trunk Railway Company of Canada against the finding of the Arbitration Tribunal that the company's ordinary and preference stocks are worthless, thirty thousand investors (mostly British) find themselves bereft of £37,000,000.

S.A. Railways—Electrification, Maritzburg—Glencoe Power House Equipment.

The S.A. Railways and Harbours invite tenders per October 18 for the supply and erection in South Africa of the following plant in connection with the electrification of the above railways, viz.:—(1) Coal handling plant for power station; (2) ash handling plant for power station; (3) circulating water screening plant for power station.

Metal Market Quotations.

London, July 31.—Standard copper, £64 7s. 6d. per ton cash, £64 10s. forward; electrolytic copper, £71 cash, £72 forward; standard tin, £162 10s. cash and forward; foreign lead, £25 12s. 6d. cash, £24 12s. 6d. forward; quicksilver, £11 7s. 6.; bar silver, 35¼d.; bar gold, 92s. 8d. per ounce.

Mining Men and Matters.

Sir Julius Jeppe sails for England this week.

* * *

Mr. H. Warrington Smyth, the Secretary for Mines, has left on a trip to England.

* * *

Mr. E. H. Langly, Inspector of Mines, Bloemfontein, has left on a shooting trip on the East Coast.

* * *

Mr. W. F. T. Harvey, of Messrs. Harvey and Russell, Ltd., sails for England this week.

* * *

The certificates issued by the Mines Department for the period ending 27th July, 1922, were as follows:—Mine Overseers (Metalliferous Mines): J. H. Bosman, A. Peek and W. Williams. Assayers: W. S. Grant, R. E. Kent and W. Torrance. Mechanical Engineers (Mines): D. S. Anderson, E. C. Bowley, J. J. P. Dolan, J. Hamilton, W. H. F. Tredre and S. P. Wood; (Works only) D. S. Anderson, A. Buchanan, J. Gardiner, F. Gimkewitz, E. Langdon, R. D. Larter and W. E. Strong. Electrical Engineers (Mines): J. J. P. Dolan and H .Oates; (Works only) H. O. Smith.

* * *

The death of Mr. Harold Tute, at Barberton, is deplored by a wide circle of friends in the Transvaal. Mr. Tute had lived in the province since the close of the South African War. He first came to the country to fight in that campaign, and saw it through from beginning to end. At its close he joined the E.R.P.M. where he remained about eight years. Later he was at Pilgrim's Rest as manager for the Transvaal Gold Mining Estates; and then at the Village Deep mine. At the outbreak of the last war he went oversea and distinguished himself in Flanders. In 1919 Mr. Tute went to Nelspruit where he engaged in orange farming on the White River Estates.

WELDING
REPAIRS
of every description can
be carried out by the
THERMIT
PROCESS

Agents in South Africa:

REID BROS. (JOHANNESBURG) LTD.
JOHANNESBURG & DURBAN
(Agents for Union of South Africa)

F. ISSEL & SON
BULAWAYO *(Agents for Rhodesia)*

Head Office:
THERMIT LIMITED
(A Constituent Company of Nobel Industries Ltd.)
155 CHURCH ROAD, BATTERSEA
LONDON, ENGLAND

LONG ENDURANCE
IS WHAT DETERMINES REAL ECONOMY

especially in rod and valve packing, working under present-day conditions

To secure the economy of service, a packing must be made of better materials than the average high pressure packings.

The reason for the long service quality of

"PALMETTO"
PACKING

is found in the high grade materials of which it is made. HIGH TENSILE STRENGTH AND PERFECT LUBRICATION OF EACH SINGLE STRAND.

Let us convince you that "Palmetto" gives longer service than other packings, by allowing us to send you, without charge, working samples to test under your own conditions. It will convince you.

Sole Manufacturers: **GREENE, TWEED & CO., 109, Duane Street, New York, U.S.A.**
Carried in Stock by:
BARTLE & CO., LTD., Johannesburg.
E. W. TARRY & CO., LTD.,
Kimberley, Salisbury, Bulawayo.

EXPLOSIVES
FUSE
DETONATORS
ACIDS
CHEMICAL PRODUCTS
SHEEP DIP
CATTLE DIP
ETC., ETC.

CAPE EXPLOSIVES WORKS, Ltd.
P.O. DYNAMITE FACTORY,
SOMERSET WEST, C.P.

PRICE'S
CANDLES
(Made in South Africa)

FOR
MINING
AND
GENERAL USE

Burn Brightly &
Economically

TRADE MARK

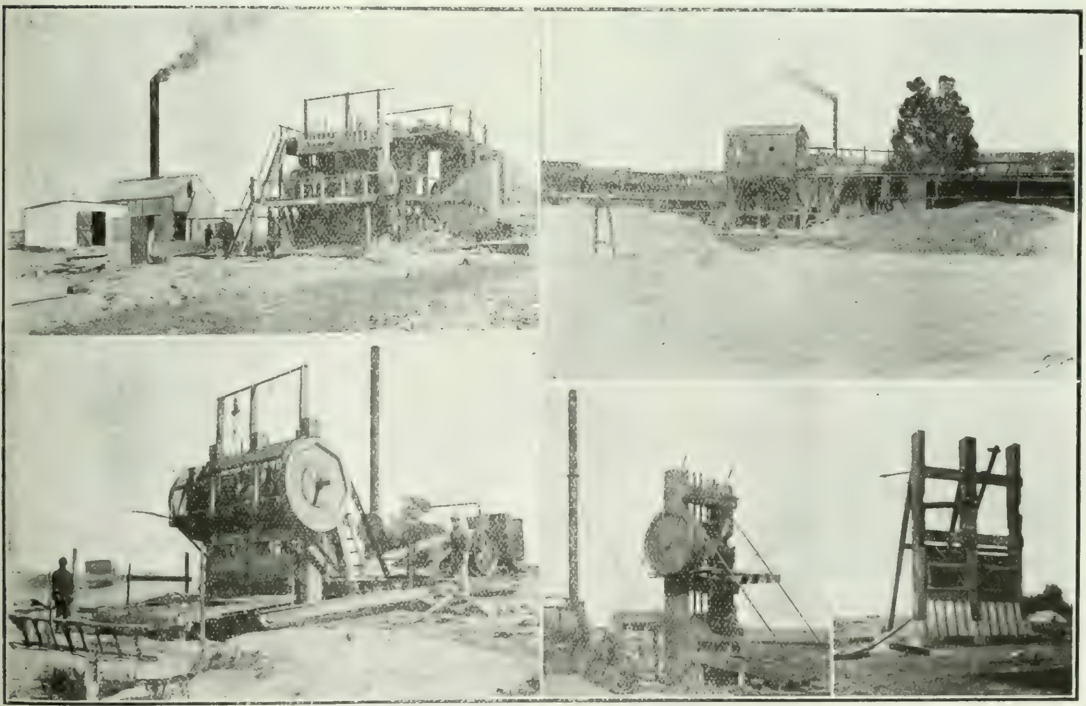
PRICE'S (South Africa) LIMITED
FACTORIES: CAPE TOWN & JOHANNESBURG
HEAD OFFICE: BATTERSEA LONDON

Small Tributors and Syndicates on the West Rand—The Great Randfontein Revival—Rustenburg Gold Discoveries.

The South African
Mining & Engineering Journal
THE ONLY MINING AND ENGINEERING WEEKLY PUBLISHED IN AFRICA.
Established 1891.

Vol. XXXIII., Part I. JOHANNESBURG, TRANSVAAL, SATURDAY, AUGUST 12, 1922. No. 1611

Small Mines on the West Rand.



Great activity has recently been manifested by tributors and small syndicates in the West Rand. The above pictures show: (1) The Golconda Gold Mine, Messrs. Blair & Jenkins, Tributors, 20 Stamp Mill, Witpoortje; (2) East Champ d'or, 20 Stamp Mill, Luipaardsvlei; (3) G. Bedford's Mill Champ d'or, 16 Stamps; (4) D. R. Cassel, Block 8, Luipaardsvlei; (5) Cairn Dhu, 10 Stamp Mill, Luipaardsvlei.

SIEMENS BROTHERS

& CO., LIMITED

MANUFACTURERS OF

CABLES

AERIAL, UNDERGROUND, SUBMARINE.
Paper Insulated. Rubber Insulated.
Gutta-Percha Insulated.
Lead Covered. Armoured.

CABLE ACCESSORIES

Joint Boxes. Connection Boxes.
Service Boxes.
Insulating Compounds. Tapes.

TELEPHONES

Manual Exchanges. Automatic Exchanges.
Intercommunication Sets.
Loud-speaking Telephones. Portable Telephones.
Mining Telephones.

PRIMARY CELLS

Fluid and Dry.

WIRES

Rubber Covered. Gutta-Percha Covered.
Cotton Covered. Silk Covered.
Asbestos Covered. Enamelled.
Motor Car Leads.

TELEGRAPHS

Inkers. Sounders. Relays.
Keys, &c. Station Sets.
Fast-Speed Apparatus.

LINE MATERIAL

Tubular Poles. Lattice Poles.
Pole Structures.
Arms. Brackets. Insulators.

SIGNALLING APPARATUS

For RAILWAYS—
(Siemens's All-Electric Power System)
and for
SHIPS, MINES, POWER STATIONS.

Representatives in South Africa:

A. J. G. SIMPSON, A.M.I.E.E.
African Life Buildings, 85, St. George's St.,
CAPE TOWN.
P.O. Box 239, Cape Town. Telephone 1202 Central.

G. H. B. BERNARD, A.M.I.E.E.
9-10, Cotts Buildings, Rissik and Fox Sts.,
JOHANNESBURG.
P. O. Box 7404, Johannesburg. Telephone 408 Central.

Telegrams : "SIEMENS."

The Great Randfontein Revival.

REORGANISATION OF THE MINE COMPLETE—BIG MERGER UNDER CONSIDERATION—RECENT IMPROVEMENT IN RETURNS.

Several factors have recently combined to increase interest in Randfontein since last we drew attention to its improving prospects. First, there are the improving returns from the Central Mine, both in respect of lower costs and better profits; secondly, there is the completion of the great reorganisation programme of the mine; and, thirdly, there is the consideration of that long-delayed scheme to merge the Central and the Estate Companies. The position of the latter is that it has an issued capital of £3,001,548 in £1 shares and £1,344,260 in 6 per cent debentures. This Company owns a number of farms in the Western Rand but its principal interest is in the Randfontein Central Mine. During the last three years the Estates Company has reduced by sales its holding in Randfontein Central Debenture Stock from £2,315,600 to £2,063,000 and has increased the amount of a loan to that Company from £698,000 to £1,120,000. Investments in the Randfontein Central and Langlaagte Estate Companies stood, on December 31, 1921, at £1,549,900, having been written down heavily in 1920 and moderately in 1921. The changes that have taken place in its finance may best be studied from figures taken from the last three balance sheets and tabulated below.

	Stocks and Shares.	Randfontein Central Debentures.	Loans to Randfontein Central.	Investments in Johannesburg Consolidated Investment Company.
Dec. 31.	£	£	£	£
1919	1,754,336	2,315,600	698,000	285,610
1920	1,560,277	2,193,300	868,000	336,000
1921	1,549,900	2,063,000	1,120,000	35,000

The terms of the amalgamation have yet to be settled, but they present no insurmountable difficulties.

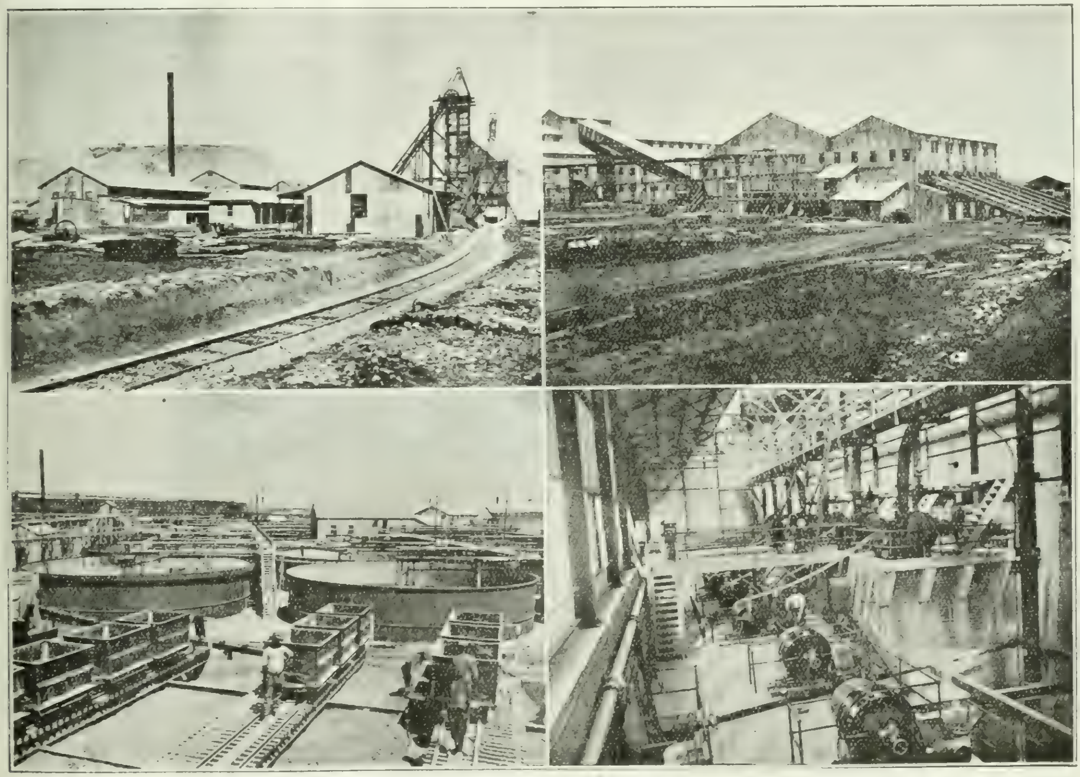
Randfontein Central.

The improved position of the Randfontein Central is best shown by the following comparative table of recent results:—

1922.	Tons.	Revenue £	Yield. Dwt.	Cost. s. d.	Profit £	s. d.
March Quarter	76,100	108,778	5.88		165,548	
April	88,700	120,031	5.82	21 7	11,161	2 6
May	103,500	144,653	5.97	23 9	21,516	4 2
June	119,500	164,437	5.91	22 3	31,499	5 3
July	133,500	189,616	—	21 8½	15,025	

The Reorganisation Scheme.

The reorganisation scheme which was started in the latter part of 1917 has been practically completed. It involved the sinking of two new vertical shafts, which are 3,896 ft. and 4,712 ft. deep respectively. They replace a number of outcrop and underground shafts which were constantly caving and getting to the state when it would have been imposible to work the mine through them. The pumping has been concentrated in one shaft and 90 old pumps have been scrapped. A new scheme of developing and working the mine has been gradually introduced, and it may be said that a new deep level mine has been established below the old outcrop mine. All this work has been carried on under very difficult conditions. First, on account of the war it was very difficult to get any new plant or



Four New Views of Randfontein.

materials at all, and subsequently, owing to the great rise in prices of machinery, stores, and labour, and to [illegible] there was still delay and the very great [illegible]. However, the two new shafts are now in commission, and their output is steadily increasing.

Good Values at Depth.

A favourable feature is that the development in the centre of the mine continues good with a consistency that is wonderful even for the Rand. There is a length of 14,000 feet of reef, which yields practically the same grade year after year, and the same high percentage payability. The northern part of the property is poor, but the acquisition of the [illegible] Deep ground to the east will certainly prove a great advantage. There are on that ground a series of reefs known as the battery series of which two are payable. Their length of outcrop is 11,000 ft., and they are practically unworked from the surface. Two incline shafts are being sunk and equipped, and the reefs are also being opened up by winzes from the surface. The development so far accomplished is very encouraging. Already a small tonnage is being sent to the mill, and this will steadily increase. It is expected that a large tonnage of medium-grade rock will be secured at a cheap rate from this section.

With an adequate labour supply and a quantity of, say, 100,000 tons of ore per month crushed, the mine will make good profits (for many years to come), and will justify all the energy and money which have been expended on it of recent years. Already substantial advantages have accrued from the better conditions which now prevail on the property.

Heidelberg Gold Fields.

GOVERNMENT UNSYMPATHETIC—A PLEA FOR HELP.

Great disappointment is felt in Heidelberg at the attitude of the Union Government towards its ambitious mining aspirations, and the Heidelberg paper prints the following cry from the heart:—

> The Heidelberg District Gold Reefs Vigilance Committee had a session last week and received the report of the Delegates who recently went down to Capetown and interviewed the Minister of Mines and the Prime Minister, and also certain correspondence which had passed since the interview. The substance of the said report and correspondence revealed the lamentable fact that a very important matter is being treated by our Government in a very trivial manner. It will probably make very little difference to Mr. Malan or Gen. Smuts whether the Heidelberg gold reefs are exploited in this decade or in the next. It may even be a matter of small moment to them whether they are worked during the life of the present generation or left for posterity to profit by, but to the dwellers in and around Heidelberg and also to a very wide circle beyond, the matter is one of paramount importance, and equally so, we claim, to posterity. A million of money in circulation during the next few years would not only prove of enormous advantage immediately, but it would benefit posterity, because the heritage we leave to posterity would, in consequence, be so much the better developed and provide so much the better foundation for posterity to build upon. The Government, however, beyond the fine words which butter no parsnips, continues unsympathetic. Heidelberg wants to see the extensions of the great reefs of the Far East Rand which traverse the Heidelberg valley, made to yield their wealth for the benefit of all concerned. The Government, in response, talks about the uncertainties of the extension of the "Nigel or Main Reef," a matter that we are not concerning ourselves greatly about. The attitude of the Government might have been ignored if it had not been for the fact that the said Government, some time ago, went out of its way, in a manner which it had never done before and has never done since, to scare the investing public in regard to mining enterprises in the Heidelberg district. The scare was most effectual. A million of money was stopped from coming in this direction. What we want is an impartial investigation, an inquiry into our contention that the scare was unwarranted, that the gold reefs are there and that their gold contents are richly payable. This the Government is evidently unwilling to grant. They palter with the matter. They fight shy of all recognition of the existence of the reefs we are talking about. They ignore all the work that has been done on them and the results obtained. They allow themselves to be guided by the hand that swayed them when they declared positively that reefs do not traverse the Heidelberg valley, which experienced prospectors contend are all the time in full evidence. Our town and district deserve better treatment at their hands,—especially as by treating us fairly they would be serving the best interests of the whole of South Africa.

Heidelberg: The Centre of the Far South-East Rand Goldfields.

REZENDE MINES.

No shaft sinking was done during the quarter. Development footage for the quarter amounted to 1,409 feet; tonnage mined, 20,638; waste sorted, 12.3 per cent; tonnage milled, 17,800; total yield (fine ounces), 8,568·26; total yield per ton (dwt.), 9·63. Working revenue (including premium), £40,260 1s. 9d.; per ton milled, 45s. 2.83d. Working costs, £24,668 13s.; per ton milled, 27s. 8·60d. Working profit, £15,591 8s. 9d.; per ton milled, 17s. 6·23d. Sundry revenue, £759 7s. 6d. Total profit, £16,350 16s. 3d. Capital expenditure during the quarter amounted to £2,630, excluding development. The native labour supply is satisfactory.

MINING IN THE PILGRIMS REST DISTRICT.

The statistics of the Department of Mines and Industries for the month of June, having reference to the Pilgrims Rest district, make the following interesting reading:—Large and small mines: Number of mines producing, 24; number of alluvial diggers producing, 12; number of concerns prospecting and non-producing, 24; working of old tailings, 1; tube mills running, 5; total output fine gold, 8,374·687 ozs.; value at the rate of £4·24773 per fine oz., £35,575; main shaft sinking, 35 feet; adits, main drives, crosscuts, 7,726 feet; other development, 1,544 feet; total tons of rock hoisted, 26,748; labour employed—whites, 344; natives, 6,557.

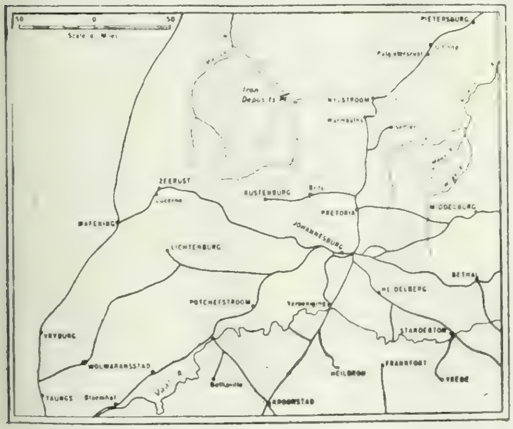
Gold Discoveries in the Rustenberg District?

REPORTED RICH FINDS—A NEW BANKET FIELD—GEOLOGY OF THE DISTRICT—BLACK REEF AGAIN.

For the second time in the past twelve months rumour has been busy with reports of rich gold discoveries in the Rustenburg-Marico districts up to the border of Bechuanaland. This area has for long been known to contain promising indications of mineral wealth, including iron ores and coal. Interest in this district has, however, recently been again quickened by reported discoveries of gold. According to one informant, discoveries of rich auriferous ore have lately been made at two or three points in the vicinity of the Crocodile River, and prospectors and farmers are said to be trekking to the new fields in large numbers. One well-known prospector whom we interviewed on the subject stated that he had recently seen specimens of banket from this locality which were very similar in appearance to the conglomerate beds of the Witwatersrand. Other authorities, however, contend that the "discovery" has been known of for many years, that it is as ascribable to the Lydenburg age, and that it is unlikely to lead to anything of much importance.

Physiography of the Area.

According to Dr. P. A. Wagner's recently published memoir on the Crocodile River iron deposits, the area illustrates in a striking manner the combined effects of complex-faulting and long continued denudation on a tract of country built up of a succession of highly resistant and comparatively easily eroded sedimentary rocks. Is is, as stated, of a rugged nature, lofty ridges alternating with flat-bottomed valleys, which in turn are surmounted by minor ridges and hills. The dominant features in the landscape are three banded ironstone ranges, which in their highest portions attain elevations of from 1,500 to 2,000 feet above the level of the Crocodile River.



Map of the Crocodile River Area.

The northernmost of the ranges trends in a north-north-east direction from the northern portions of Mooivallei No. 144 and Donkerpoort No. 839 across Rosseauspoort No. 32, Rotterdam No. 237, and Cornwall No. 521; eventually dying out on the last-named farm beneath the Waterberg sandstones occupying the north-eastern part of the area. The range culminates on the farm Rosseauspoort in a great escarpment presenting a precipitous face to the north-west, in which it attains an altitude of 5,160 feet above sea-level. This is the most elevated part of the area.

Geology.

Geologically, the area is situated at the point where the north-western rim of the Bushveld basin has, as a result of thrusting from the south, overridden the south-western edge of the main Waterberg basin. It thus includes small portions of the margins of both basins, that of the former showing the Transvaal and Ventersdorp Systems resting on the older granite and dipping in a general south-easterly direction beneath the igneous complex of the Bushveld.

As in the country lying to the east, the contact between the two basins has been the scene of great earth movements caused by intense pressure acting from the south, and doubtless in great part due to the intrusion of the Bushveld laccolite. The greater part of the area is occupied by the Transvaal System. This forms a broad belt with a general north-east-south-west trend, which on the farms Mooivallei No. 144 and Donkerpoort No. 830 is split by faulting into two portions, one trending north-north-east and the other roughly east and west. The two belts gradually diverge, being separated in the north-eastern part of the area by an irregularly wedge-shaped tract of Waterberg sandstone representing a south-westerly projection from the main Waterberg area to the north-east. The Waterberg sandstone rests unconformably on the rocks of the belt trending north-north-east, while its boundary with the east and west belt is formed by a great thrust fault. Dipping beneath the Transvaal System on the north-west is a belt of rocks partly of volcanic and partly of sedimentary origin belonging to the Ventersdorp System. These rest unconformably on the Old Granite. On the south-east the rocks of the Transvaal System are succeeded by norite and diabase belonging to the Igneous Complex of the Bushveld. These rocks have invaded the upper part of the Pretoria Series and extend as far as the Middle or Daspoort quartzite. The Magaliesberg quartzite is broken up into detached fragments completely surrounded by norite. In the south-eastern corner of the area normal red Bushveld granite makes its appearance. South of the southern iron range, and north of it between the Crocodile River and the Bier Spruit, the underlying rocks are over wide stretches hidden from view by a considerable thickness of alluvium and superficial drift.

The agency for the celebrated wire ropes manufactured by Thos. & Wm. Smith, Ltd., Newcastle-on-Tyne, is now held by Messrs. Angus & Co., Ltd., of Southern Life Buildings.

INVESTORS' DIARY.

Forthcoming Company Meetings.

(a) Annual general meeting; (s) special or extraordinary general meeting.

Meetings will be held in Johannesburg unless otherwise stated.

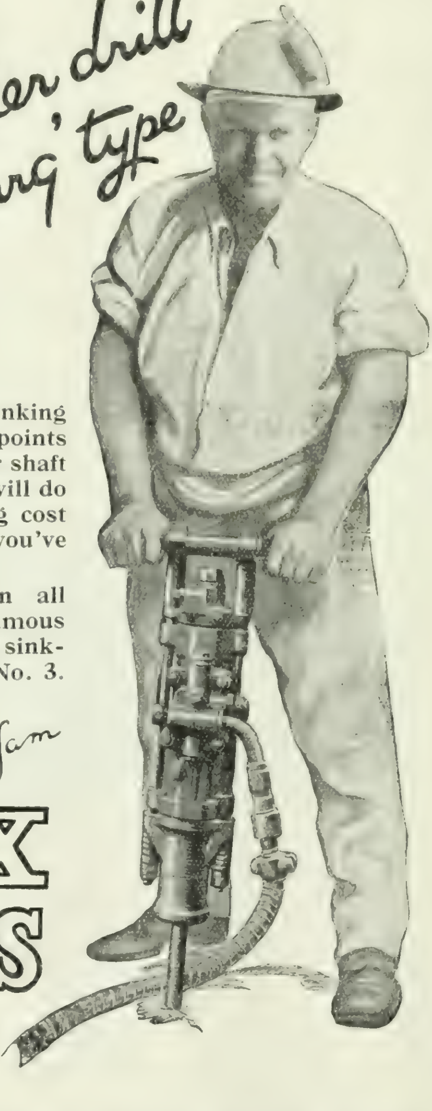
Aug. 30.—Diamond Fields of Africa Exploring Co., Ltd. (a), 3 p.m.

Sept. 20.—Swaziland Tin, Ltd. (a), 12 noon.

Sept. 21.—Transvaal Gold Mining Estates.

Sept. 29.—Simmer and Jack Prop. Mines (a), 11.30 a.m.

Nov. 17.—Sub Nigel (a), 11.30 a.m



Here's a Sinker drill of the 'Joburg' type

We call it the Joburg No. 3 Sinking Drill, and its got all the good points of the Joburg "Family." For shaft sinking in the hardest rock it will do better in speed and low running cost than the best sinking drill you've ever used.

Made for high efficiency on all pressures and fitted with that famous little spool type valve. End your sinking troubles with the Joburg No. 3.

Climax Sam

CLIMAX DRILLS

Save your Bills
Climax Drills
British —— from
Handle to Steel-Point

THE CLIMAX ROCK DRILL & ENGINEERING WORKS
4, Broad Street Place, London, E.C.2. Works:- Carn Brea, Cornwall.

LOCAL ADDRESS:
49, Stella Buildings, Corner Rissik & New Streets,
Johannesburg.
P.O. Box 4256. Telegrams: "THUMBSCREW." Telephone 2794.

West Rand Small Mines Activity.

REVIEW OF RECENT PROGRESS OF SMALL MEN AND SYNDICATES ON THE WEST RAND.

(By a Correspondent).

The mining world will be interested to learn of the continued activity prevailing in the neighbourhood of the Roodepoort-Krugersdorp area. A considerable number of small ventures are progressively demonstrating the belief entertained by their promoters in the possibilities of this district.

While no large companies are taking a hand in the smaller mines development on the West Rand, the opening up of fields for the benefit of the small worker is of great promise, since it gives that impetus to the attention of the small capitalist which is so badly needed at the moment. The amendments in the Gold Law which will result in decreased payments to Government for claim licences, etc., will doubtless fructify and expand this small worker movement along the Reef, and will in due course cause a revivifying influence to spread amongst the workers in the direction of a concentration of their energies towards the building up of another industry side by side with the Industry *par excellence* of the Rand. One may note *en passant* that in most cases it is the old mines which have been resuscitated, including such as the Lancaster Central, now worked by a syndicate of the same name; the Luipaardslvei Tailings and Waste Rock Syndicate; and the Vogelstruisfontein Outcrop and Deep Level Syndicates (Taylor and Penhale and another, capital £6,000), two 10-stamp mills crushing development rock.

The Vogelstruisfontein Deep Level Claims have been repegged by a strong financial syndicate, and a fairly large mill (30 stamps) will be erected.

The defunct Princess Estate has been given a new lease of life, and is now equipped with a 25-stamp battery and cyanide works to crush the mine rock.

The East Champ d'Or Syndicate is busy at work crushing development rock and mine rock near Witpoortje Station.

The Beaden Syndicate, now under another name, is still going strong as a mining proposition. It has a claim area on the old French Rand, and has been at work for more than three years, with results entirely satisfactory to the owners.

Mr. J. H. Humphreys has discarded his milling plant on the French Rand, and is about completing a tube-mill cyanide plant for the all-sliming process. He has good backing, and will do well on his 42 claims once the new plant is fairly started.

The Gipsy Mine is being equipped on a 10-stamp milling basis, and will in due course figure amongst the gold producers. A large tonnage of ore has been developed in the mine by the old Gipsy G.M. Company, and this will be of advantage to the new comers.

Mr. Taylor has repegged [illegible] claims on the Kimberley Reef, near the Marie Louise Mine, Florida. Very glowing reports have been made as to the values disclosed here, but they have yet to be confirmed by independent investigation

One must not forget the Durban Roodepoort Syndicate, a 10-stamp proposition, well equipped, and with a power supply derived from the Victoria Falls Power mains. Its capital is £3,750, [illegible]

This is a factor to be kept in mind amongst men contemplating the erection of power plants along the Reef. The V.F.P. mains are spread octopus-like in all directions, and thus obviate the necessity for large initial expenditures for engines and boilers on the part of the small mine worker.

Altogether the indications are most promising for healthy and continuous development of the old mines' reefs along the West Rand area.

One leaves out of account the larger financial interests and the big companies already operating along the West Rand. It need only be remarked that the expansion foreshadowed by the reopening of the old Lindrum Mine by the Randfontein Estates, and the Violet Mine by the West Rand Consolidated, clearly demonstrates the fact that the vast unworked areas of the district are still to be explored and proved, and that sufficient evidence of payability has already been disclosed by work done to justify an optimistic attitude as to the future development of the area.

The Coronation Syndicate will have a good mining area on Luipaardsvlei No. 10 in the not too distant future, and the work done by the West Rand Estates (Kunst) has further proved the payability of hitherto unsuspected areas of Main (?) and other reefs.

The Government Reef is being once more tested near Witpoortje by an enthusiastic syndicate, which talks in ounces, but will probably do quite well in pennyweights of gold extraction.

And, finally, the Western Main Reef at Bank and beyond will some day prove its theories and get the necessary capital to develop yet another Randfontein in the Far West Rand.

DECIDING THE FUTURE OF RHODESIA!

Some of the leaders of commerce and industry of Rhodesia, who are now exercising their minds on the question of coming into the Union.

If You Want Anything

:: :: **Electrical** :: ::

The Place

G-E. BUILDING,
Marshall and Simmonds Streets.

and

THE GUARANTEE OF EXCELLENCE
ON GOODS ELECTRICAL.

The Sign

IS ALL YOU NEED TO REMEMBER

SOUTH AFRICAN
GENERAL ELECTRIC CO., LTD.,
G-E. Building, 16, Simmonds Street, Johannesburg.
Box 1905 Telegrams : "INGENETRIC." 'Phone 4321

With Agents throughout the Union, Rhodesia, Portuguese East Africa and Belgian Congo.

Iron Ore in British Africa.

REVIEW OF THE CHIEF DEPOSITS RHODESIAN, SOUTH-WEST AND EAST AFRICAN OCCURRENCES.

According to "Iron Ore," Part 2—British Africa, just issued (H.M. Stationery Office) by the Imperial Mineral Resources Bureau, iron ores are known to occur extensively in Africa, but up to the present a considerable part of the continent is unprospected and large areas await investigation. The chief deposits in British Africa are in the Union of South Africa, while Northern and Southern Rhodesia, Swaziland, British East and West Africa all contain more or less important deposits. In Basutoland no iron ores of commercial value have as yet been found. In Bechuanaland iron ore is known to exist, but it has not been exploited, and there is no information available regarding it.

In Somaliland iron ore in the form of magnetite appears to be present in considerable quantity disseminated through basic igneous rocks, and it is also found in lenticular deposits. Nodules of limonite and red hematite occur in sandstones of Eocene age, and recent deposits are stated to contain magnetite. In St. Helena nodular limonite is stated to be met with in large quantities on the plains of Horse Pasture and at other localities, while impure siliceous iron-ore occurs near Shipwood. These deposits, however, appear to be of no commercial value.

Basic rocks containing a considerable amount of magnetite, and ferruginous deposits resembling laterite, occur in the island of Mauritius, but they appear to be of no economic importance at the present time. In the Seychelles lateritic iron-ore is found containing in one case 20.3 per cent. of iron, with 27.2 per cent. of alumina, 16.3 per cent. of silica, and 4.2 per cent. of titanium dioxide. Richer deposits no doubt occur, but there is not likely to be much iron-ore that could be profitably exported.

South-West Africa.

The South-West Africa Territory has an area of 322,450 square miles, and is thus some 45,000 square miles larger than Cape Province. Until 1915 it was a German colony, but was conquered by the forces of the Union of South Africa, to whom a mandate for Government has been granted by the Powers. Iron ores are known to occur abundantly in the territory among the pre-Cambrian rocks and in the Otavi series.

According to Wagner, the only deposit that has been worked up to the present is situated a few miles to the north-west of Kalkfeld, in the Omaruru district, with which it is connected by rail. The ore-body consists chiefly of a calcareous brown iron-oxide, which has been used at Tsumeb for fluxing the lead-copper ores that are smelted locally. It is found at the contact of a gabbro-like mass that is intrusive in chrystalline limestone.

Large deposits of pure iron ore (hematite and limonite) are reported to occur interbedded with the rocks of the lower division of the Nama System in the western part of the Koakoveld. They have a thickness up to about 160 ft., but owing to their geographical position it is improbable that they will be worked for many years to come. The ore in these deposits contains 60 per cent. of iron.

Other deposits are exposed at a number of localities in the southern part of Great Namaqualand and in Bastardland, while a bed of impure limonite occurs in Dwyka shale on the farm Eisenstein to the east of Keetmanshoop.

Rhodesia.

A large number of deposits or iron ore occur in Rhodesia associated with basic igneous rocks. At present the only deposits known to exist in commercial quantity and of good quality are those of Southern Rhodesia. In Northern Rhodesia deposits of magnetite are known to occur, but they are most titaniferous and sometimes highly so. Near Lake Bangweolo, laterites are stated to cover a considerable area (possibly 1,000 square miles or more), and assuming that the ore contains 25 per cent. of metallic iron, and has a thickness of 3 ft., the available supply would be over 6,000,000,000 tons. The ore, however, is highly siliceous. No systematic investigation of the iron ores of Southern Rhodesia has been undertaken, with the exception of a partial investigation of the chrome iron ores. The output of ironstone in Southern Rhodesia in 1915 was only 8,591 tons, dwindling down to 2,232 in 1919.

Swaziland.

As regards Swaziland at the present time, very little is known about iron ores in that country. According to information furnished by the Mines Department of the Union of South Africa, there are siliceous iron ores in the Swaziland system and in the neighbourhood of Pigg's Peak, and some of these are of such a quality that they might be worked in favourable circumstances. Iron ore is reported to be plentiful throughout that portion of the territory bordering the Transvaal, but, owing to the absence of coal and lime, and lack of transport facilities, the deposits are of no commercial value at present. In view of these conditions, no careful investigation has been carried out on any of the deposits, and it is therefore impossible to give any idea as to their extent. The iron-ore occurs as hemitite in lodes, and as magnetite in schist. Ilmenite is dispersed throughout the granite.

Up to the present no mining for iron ore has been carried on in Swaziland. There are no developed resources, and it is impossible to give any idea of the extent of the undeveloped resources. There are few mineral areas owned by the Crown. Legal provision has been made for the exploitation of these by the public in the event of payable minerals being discovered. Mineral rights over the remaining portions of Swaziland are owned by various companies and persons by virtue of concessions granted by the late Swazi king, Mbandine and subsequently confirmed. None of the companies are registered in Swaziland. Some are registered in Great Britain, and the rest in the Union of South Africa. As far as is known, British capital would entrely control any future production. There would be no difficulty in the control of the development of the iron resources, and the existing arrangements sufficiently safeguard British interests.

No manufacturing is being done in Swaziland. As the country develops there will be an increasing demand for iron implements required in agriculture and mining. At present these are principally obtained from merchants in the Union of South Africa, a small percentage of agricultural implements being obtained from merchants at Lourenco Marques in Portuguese East Africa. There are large coal-bearing areas in Swaziland, but it is unlikely that either the iron or the coal resources will be developed until a railway connection has been established with the Union of South Africa.

The Kenya Colony.

No systematic geological survey has yet been made of the Kenya Colony and very little prospecting has been done, so that the information relating to the mineral resources of the country is very meagre. However, it seems probable that the quantities of iron ores available in this country will be as large as in Tanganyika or Uganda or Nyasaland, which border upon it, and much more investigation and exploration is required into the mineral resources of this colony.

Iron ores of various kinds are abundant in Uganda, especially those of hydrated type, notably limonite, which is frequently concentrated in the surface layers of laterites and other detrital deposits. Surface ores such as these are often worked by the natives of this Protectorate. Apart from these ores, however, others of economic importance are known, hematite and magnetite being abundant in places.

Magnetite in grains of low granular [illegible] is found in some pegmatites and is extremely common as scattered crystals in the lavas of the Mount Elgon Series, and may be obtained in quantity from some of the alluvials derived therefrom. Apart from an occurrance discovered immediately after the close of the financial year (1919-1920), the best magnetites as yet known are found in certain quartzites associated with the pre-Cambrian chrystalline rocks. Hematite occurs under precisely similar conditions, and is a good deal more common than magnetite, while hematite-magnetite and magnetite-hematite-limonite ores (often with goethite) occur similarly.

The abundance of iron ores in Uganda has attraced the notice of explorers. It is difficult to say which district produces the most iron, but Kigezi must take a high place. The blacksmiths of that district are a very exclusive caste. They carry on a considerable trade with the country to the south and west and also with their immediate neighbours on the east.

East Africa.

Tanganyika Territory, formerly German East Africa, has an area estimated at 384,100 square miles and appears to be fairly rich in deposits of iron ore. The various deposits are mentioned in the "Iron Ore Resources of the World," 1910. Further discoveries have been made since, and are duly noticed in the volume under review.

The iron ores found in the Nyasaland Protectorate are chiefly hematite and magnetite. Some deposits of hematite outcrop on the Mvai and Dzonze ridge, a sample from Mangui Hill, in the West Shire district, carrying 69.3 per cent. of metallic iron, silica, 0.69; sulphur, nil; phosphorus pentoxide, 0.35 per cent.

West Africa.

With reference to British West Africa, the Colony and Protectorate of Gambia cover an area of 204,200 square miles, the administration being British on both sides of the River Gambia up to the French Protectorate. The river makes transportation very easy, being navigable for ocean-going vessels of 12 ft. draught for about 150 miles, and for vessels of 18 ft. draught for 120 miles. The river passes near, and in some cases under cliffs that contain deposits of lateritic iron ore, which, though of low grade, is very abundant. Thus costs should be low, and as the chief trade of the Colony is in ground-nuts, the iron ore can be profitably carried as ballast. Analysis show metallic iron ranging from 24.3 to 35.2 per cent.

The following types of iron ore are found in Sierra Leone: (1) Lateritic ores; (2) segregations in norite; (3) black sands. The principal varieties of ore are oxides and hydrated oxides amongst lateritic ores, and titaniferous magnetite as segregations and black sands. A little iron-ore smelting is done by certain native tribes of the Protectorate in small furnaces built of clay.

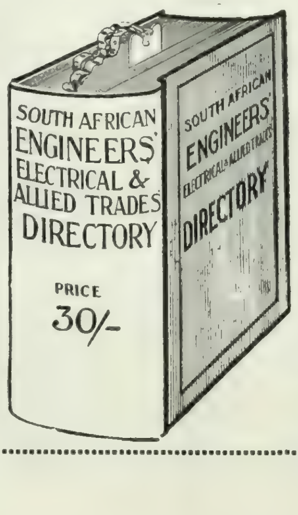
Iron ore of good quality is reported to be widely distributed in the Gold Coast Colony as a surface deposit. East of the River Volta a clay-ironstone vein traverses the beds, and has been smelted by the natives. In 1915, the Director of the Gold Coast Geological Survey reported that of twelve samples of iron ore from different parts of the country six proved to be of high grade, showing 52.42 to 63.59 per cent. of iron, with low phosphorous, sulphur and silica; two were of good quality for foundry work; while four had rather too much silica to be of value.

Investigations carried out by the Mineral Surveys of Nigeria have shown that iron ore is widely distributed over the Colony and Protectorate. The most important deposits are those of Mount Patti, near the junction of the Niger and Benue rivers. This hill rises 1,050 feet above the level of the river. Its summit is several square miles in area, and consists of bedded iron ores. The deposits are favourably situated for exploitation. The Niger is close at hand and it might be practicable to carry the ore from the quarry to the riverside by a system of aerial ropeways. Unfortunately, the ore is not of high quality, and for that reason it probably could not be exported under present conditions.

The volume extends to some seventy-six pages, and contains all the information collected by the Imperial Resources Bureau. In several instances the Bureau obtained special reports through the Colonial Office in respect of the mineral resources of the different Colonies dealt with in the volume.

The Year with the Messina Company.

The report of the Messina (Transvaal) Development Company for the year ended 30th June, 1921, states ore reserves were estimated, in terms of long tons of unsorted ore: Proved ore, 171,694 tons of 4.01 per cent. copper; probable ore, 160,128 tons of 3,24 per cent. copper, and possible ore 234,155 tons of 2.70 per cent. copper, making a total of 565,977 tons of 3.25 per cent. copper, of which 87,027 tons of 3,66 per cent. copper is broken ore in stopes. In 1911 the company guaranteed 4½ per cent. interest on capital cost of section of the railway, which extends from Bandolier Kop to Messina, amounting to an annual charge of £35,640. The agreement was modified in June, 1918, to effect that the company should only pay amount due under its guarantee, if it earned sufficient profits to do so, but unpaid instalments were to accrue until 1927, when the whole amount outstanding automatically fell due. With a view to obtaining relief from the above charges, protracted negotiations have taken place with the Union Government, and an Act of Parliament was passed in June, 1921, releasing the company from all past and future obligations in this respect on condition that it pays an additional 7½ per cent. profits tax to the Railway Administration of the Union Government for a period of 15 years. Under this agreement the company is released from an already accumulated liability of £97,985, in addition to possible future liability of £231,660. A sum of £59,595, being a portion of the amount paid for excess profits duty, appears on credit side of profit and loss account. Inland revenue have since agreed that the whole of the amount paid by the company for excess profits duty (£123,128) is repayable, and the balance will appear in the next account. After bringing back to the credit of profit and loss account amounts which had previously been debited in respect of railway shortfall, the amount repaid in respect of excess profits duty above referred to and reserve for excess profits duty no longer required, and charging Debenture interest and income tax, there is a credit balance of £33, reducing the debit balance of £77,667 brought forward to £77,633.



INCLUDING A
COMPLETE MINING
DIRECTORY
OF SOUTH AFRICA.

PUBLIC SUPPLY
UNDERTAKINGS
RAILWAYS
TRAMWAYS
SUGAR MILLS
&c. &c.

Published by
S.A. Mining & Engineering Journal
Stock Exchange Building
Johannesburg

Research Work of U.S. Bureau of Mines.

ACTIVITIES REVIEWED.

The purpose of a new investigation to be undertaken at the Experimental Mine of the U.S. Bureau of Mines near Pittsburgh, has for its object the determination of the following factors in the problem of coal mine ventilation: (1) Most practical method for the measurement of flow of air in mines; (2) the resistance to flow of air under various conditions of surface, cross section and obstructions; (3) the coefficient of friction; (4) simple formula for mine ventilation calculation, and (5) flow of heat in coal and shale.

Mr J. E. Tiffany, assistant explosives engineer at the Bureau, now in Europe, has been authorised to inspect the mining and explosives experimental stations of England, in order to compare their methods of testing with those used in the United States. Mr Tiffany will also study the use of permitted explosives in British coal mines.

At the Pittsburgh Station tests have been made in a small gallery to obtain comparative data as to the sensitiveness of methane and petrol for the contemplated research as to the safety of petrol motors. Permissible equipment, which has been tested by the Bureau and more carefully inspected by the manufacturer, rather than "flame-proof" equipment, should be required in all gaseous mines or gaseous sections of mines and the use of any other should be discouraged.

Two series of studies have been undertaken at Pittsburgh by the Bureau in connection with electrical shot-firing methods in mines. The first problem is the relative danger of firing shots with iron and copper wire electric detonators, which has a possible bearing on the mine fires reported in the Utah mines. The second problem is the cause of mis-fires in the firing of a large number of series shots by push-down type blasting machines in places where the leakage current through the earth is excessive.

Field studies have been made in Pennsylvania by the Bureau regarding the preparation and particularly the washing of both anthracite and bituminous coal. In addition, special attention was given to two new coal-cleaning processes now being tried out on anthracite—the Conklin-Elmore and the Chance processes. Methods for the utilisation of culm were examined. In the bituminous fields the use of tables and dewatering pits were studied.

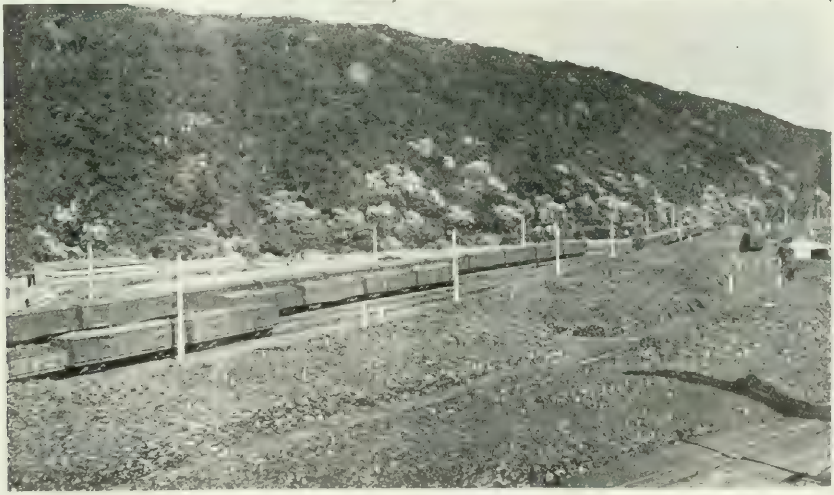
Tests for the critical temperature of Freeport coal in different sizes, made at Pittsburgh by the Bureau, show that the smaller the size the lower is the temperature at which spontaneous heating begins. Experiments are under way to determine the heat conductivity of coal or rate of dissipating heat through a layer of coal, this includes the effect of gas convection and conduction in interstices.

In the co-operative work to be undertaken by the Bureau of Mines, the bureau of Standards and mine operators, regarding standardisation of mine stoppings, arrangements have been made for conducting explosion tests of the strength of various types of stoppings at the Experimental Mine of the Bureau of Mines at Bruceton, Pa. It is planned to construct in the Experimental Mine a chamber where stoppings of different strengths can be erected and tested by the use of explosives.

The preliminary draft of a proposed schedule to cover tests of mine telephones to determine their permissibility for use in gaseous mines has been prepared by the Bureau. The schedule is based on experiments at the Pittsburgh Station, which proved that under certain atmospheric and mechanical conditions an electric spark of sufficient intensity to ignite gas could be produced. It has been commonly believed that the mine telephone was perfectly safe in this respect.

A tentative draft of a schedule giving the procedure for establishing a list of permissible electric switches and junction boxes for use at the outer edge of trailing cables has been prepared by the Bureau and submitted to manufacturers, engineers and mine operators for criticism.

THE REVIVAL OF THE DURBAN COAL EXPORT TRADE.



Coal at the Bluff, Durban.

Stocks Have Arrived

Goodrich Plain and Armoured

HOSE - - - -

FULL stocks of Goodrich Air and Water Hoses have just been landed and are ready for delivery. Sizes, 1 in., ¾ in. and ½ in., plain or armoured.

"The Right Quality at the Right Price."

J. H. Vivian & Co.

Telegrams: "Vivianco
Phone 6630
P.O. Box 301

GENERAL MINING BUILDINGS
—Main Street—
JOHANNESBURG

WHEN YOU SPECIFY

Goodrich
AIR
HOSE

for service in mines, tunnels or wherever air hose can be used, you get a product backed by fifty years of rubber knowledge.

Goodrich Air Hose will withstand the most gruelling tests of hard usage. It is tough and wear resisting, yet flexible and easy to handle. It will not leak or kink.

ROBINS
CONVEYING BELT COMPANY
NEW YORK
Engineers, Founders, Machinists

Design, Manufacture, and Erection of
BELT CONVEYORS
BUCKET ELEVATORS
COAL, COKE, AND ORE SCREENS
COAL AND COKE CRUSHERS
CAR DUMPERS
COAL AND ORE BRIDGE CRANES
ORE-BEDDING SYSTEMS
SHIP LOADING AND UNLOADING TOWERS
COAL AND ASH HANDLING EQUIPMENT FOR POWER PLANTS
COAL HANDLING AND SCREENING EQUIPMENT FOR COLLIERIES
AND MANY OTHER TYPES OF MATERIAL-HANDLING EQUIPMENT.

Branch for South Africa:
Robins Conveyors (S.A.), Ltd.,
P.O. Box 4736, 'Phone 4182, JOHANNESBURG.
P.O. Box 811, 'Phone 3383, DURBAN.

MILLAR DENNIS
ORIGINAL MAKERS OF

"BRADFORD INVERTED"

PLUG COCKS.

SOLE AGENTS:

GEO. CRADOCK
AND CO. (S.A.), LTD.
75-77, CULLINAN
BUILDINGS.

P.O. Box 316. Telephone 539.
Tel. Add.: "ROPES."
JOHANNESBURG.

The South African Mining and Engineering Journal.

HEAD OFFICE: 176-180 Stock Exchange Buildings (2nd Floor), Fox Street, JOHANNESBURG, Union of South Africa.

Telephone **913.** P.O. Boxes **963** and **4573.**

Cables and Telegraphic Address: "Mining Journal."

Annual Subscription Rates: Oversea, £2; Union of South Africa and Rhodesia, £1 10s.; Local Delivery (Town only), £1 6s., payable in advance.

Agents for Great Britain and America: Argus South African Newspapers, Ltd., Byron House, 82-85, Fleet Street, London, E.C. 4.

Copies of this Journal are obtainable at all Branches and Agencies of the Central News Agency, Ltd., at all News Agents and Railway Bookstalls throughout South Africa, and at the London Agency as above.

CONTENTS.

PAGE.
The Great [illegible] Revival ... 1643
Heidelberg Goldfields ... 1644
Gold Discoveries in the Rustenburg District ... 1645
West Rand Small Mines Activity ... 1647
Iron Ore in British Africa ... 1649
Research Work of U.S. Mines Bureau ... 1651
Topics of the Week ... 1653
The Geology of the Great African Rift Valley ... 1657
July Output: Group Returns ... 1659
Letters to the Editor ... 1661
Sharemarket ... 1663
The Cyanide Process ... 1664
Trade and Industries Section:
    The Week in the Mining Material and Engineering Trades ... 1665

TOPICS OF THE WEEK.

Next Week's Conference & the Proposed Conciliation Board.

The momentous conference between the employers and the trade union representatives takes place next Monday, and the event of this week has been the advance publication of its proposals by the Chamber of Mines. Next week's conference may be regarded as the blossom and fruit of the work of the Mining Industry Board, which Mr. Brace, to his credit be it said, has never ceased to regard as an instrument for securing a measure of permanent peace in the mining industry. As the chief protagonist of peace, Mr. Brace will, doubtless, welcome the tone and temper in which the terms now proposed by the Chamber are framed. The detailed proposals have already appeared in the daily Press, and they need not be reprinted in our columns until finally approved by the forthcoming conference. But the covering letter in which Mr. Gemmill, on behalf of the Gold Producers' Committee of the Chamber makes certain preliminary remarks, calls for comment. At the outset, Mr. Gemmill, writes: "In the basis proposed an endeavour has been made to build up in a reasonable and natural way from the conciliation machinery that is already in existence. In the view of the employers it is advisable that any machinery now agreed upon should be given statutory authority by Parliament passing an Act providing that conciliation machinery such as is now under discussion may be registered in the White Labour Department, and shall thereafter have the force of law until denounced by either party after due notice. In the event of a lock-out or strike taking place contrary to the provisions of such agreement, the employers who effect the lock-out, the executive committee and officials of any employers' organisation which is a party thereto, the employees who go on strike and/or the executive committee and officials of any trade union which is a party thereto, should be liable to prosecution, and on conviction to imprisonment without the option of a fine. A matter which it is suggested should also be provided for by legislation is that a secret ballot under Government supervision shall take place before any strike is declared. The Transvaal Industrial Disputes Prevention Act would, of course, cease to apply to the gold and coal mining industry. It would only lead to confusion to have two different conciliation systems in force at the same time." Included in these conditions, it will be seen, are the valuable fundamental requirements of a secret ballot under Government supervision, which the recent strike has shown to be imperative, and the giving of the force of law to the conciliatory machinery. Mr. Gemmill goes on to point out that "the proposals contained in the memorandum appear to differ from those made by the Mining Industry Board in only one important respect, namely, the limitation of the powers of the independent referee to the power of investigation and report. Mr. Brace's suggestion was that the referee should be empowered to give a binding decision for or against any particular demand." Mr. Gemmill says the employers cannot agree to this suggestion. To place such a power in the hands of a third party would offer practically all the objections of the compulsory arbitration system which is now so much discredited. Many reasons against the suggestion could be given, but as the employes' representatives are apparently also opposed to it, it seems unnecessary to do so. In regard to the vexed question of recognition of unions, Mr. Gemmill says: "The Chamber assumed that it is not the intention of the board to endeavour to rehabilitate particular trade unions or officials by bringing pressure upon the industry to recognise them. In the absence of any legislation in this country laying down the conditions upon which unions are officially recognised, it is necessary for each industry to make its own conditions in that respect. The mining industry, after very careful consideration, has laid down certain conditions of recognition, and the fact that those conditions have already been accepted by practically all the trade unions shows that they are not unreasonable. The conciliation machinery now proposed assumes the acceptance of those conditions by any union desiring to utilise it." The firm yet conciliatory tone of these proposals will commend them to all who have followed the recent history of labour relations on the Rand. It is true that the collieries may require some modifications and the V.F.P. people intend to submit a separate memorandum. But as far as the gold mining industry is concerned, they represent the last word on the subject; and it is earnestly to be hoped that, in the interests of all concerned, and of the country in general, they will be adopted at next week's conference.

General Smuts and Rhodesia.

General Smuts continues his triumphant progress through Rhodesia, and everywhere seems to be receiving enthusiastic receptions. The terms offered by the Union Government both to the Chartered Shareholders and to the people of Charterland have been approved by public opinion and the Press generally, with the exception of a section of the extreme Nationalists. Indeed, the shareholders in the B.S.A. Company have already formally expressed their acceptance of the terms, and nothing remains but for the people of Rhodesia to make their free choice in the matter.

At Bulawayo the other night General Smuts put the whole case in a nutshell when he said: "You will probably hold your referendum before the end of October, and then you will be in a position to say what you are going to do with the future. That choice is entirely in your discretion. I hope your choice will be a wise one in the interest of [illegible] country and South Africa as a barrier. [illegible] of responsible government in this country on the terms of the Letters Patent, we in the Union will have no complaint to make. You will have exercised your choice and chosen your own destiny. On the other hand, should you decide on this referendum to join your fate with the great Union further [illegible]. The Union Parliament will have the last stage to consider in regard to your future destiny. The Union Parliament will have to say whether they approve of the work of their Government and whether they are going to satisfy the choice which the people of Rhodesia have made. Let me say also about the final stage which may possibly come. I have not the least doubt in my mind that if you decide to join your fate with the Union our Parliament in the Union will ratify the work of their Government. We have done nothing else but follow the clear road which has been given to us by the people of the Union."

Judging from the reception accorded to those words of the Prime Minister of the Union and the expressions of public opinion from Rhodesia, there does not seem to be much doubt that the people's vote will be overwhelmingly in favour of entering the Union.

Cheap Money.

How much of the recent revival of interest in Rand Shares is due to cheap money in London is difficult to say, but as a factor it must be considered. According to our London contemporaries, the Stock Exchange traditionally and rightly anticipates that cheap money will sooner or later stimulate purchase of securities. With an official minimum of 3 per cent., the banks give no more than 1 per cent. to their depositors, a rate which soon begins to look unattractive. Cautious folk coming in to invest naturally turn to the Trustee list, hence the well-founded theory that gilt-edged stocks will be the first to move. But all stock market experience goes to show that once a real buying movement sets in the activity soon "boils over," and from Government and municipal securities investors turn to what may be termed the second and third rows of stocks and shares—higher yielding preference and, it may be, good Ordinaries. What will happen on the present occasion is hard to determine, but we may be tolerably sure of the boiling-over process. Then there comes the speculator seeking "something to go for." All the London papers are agreed that at the moment South African gold shares seem as likely to receive speculative attention as any other section, for "with lower costs and the shortage of gold there do really appear to be possibilities in this direction." This, of course, is very welcome news to us on this side.

The Rhodesian Railways.

The reports of the two big Rhodesian railway companies—a summary of which appeared last week—are of unusual interest by reason of the fact that they figure so largely in the assets to be taken over by the Union Government in the event of its offer to Rhodesia being accepted. In the event of that offer being accepted, the railways will become the public property of Rhodesia and the other "United States" of South Africa, and the two companies will for all practical purposes go out of existence, though the Government would not immediately acquire any of the debentures, nor the whole of the ordinary shares, but it would secure "practically the whole of the shares," as the Prime Minister's statement said the other day. Looking first at the Rhodesia Railways, we note a decrease of 18,706 in the train miles run, as compared with the preceding year, an increase of £235,917 in the gross revenue and of £220,605 in the expenditure (including depreciation provision), leaving a balance of net earnings of £427,628, or an increase of £15,312. Though the number of passengers carried decreased by 6,529 and the tonnage of general goods by 62,707, the revenue from these sources was larger by £17,176 and £39,814.. There was a growth in both the volume of traffic and the receipts from minerals and construction material (the respective increases being £137,546 and £36,000). The revenue per ton mile rose by 3s. The Mashonaland Company, which operates from Umtali to Salisbury and Kalomo to Broken Hill, as well as on the Lomagundi and Shamva branches, reports increases in every thing except the carriage of livestock, etc. The train miles run were greater by [illegible], and the revenue per train mile rose by 1s. 7d. to 16s. 7d. and the expenditure fell by 6d. to 11s. 6d. These achievements are reflected in the increase of the gross revenue by £229,705 to £767,990. While the expenditure rose by £101,180, the net earnings were £236,059, or an increase of £128,525. Thus while the net earnings of the Mashonaland Company are little more than half those of the Rhodesia Railways, the position on the former Company's lines is very different from what it was. There are considerable increases from general merchandise, agricultural produce and mineral traffic, higher rates and fares again being largely responsible, though the bigger volume of traffic is indicated in each department. The Kalomo-Broken Hill section gives good results. The Lomagunda line shows net receipts of £2,550 out of a year's revenue of £32,625, and the Shamva line of £1,560, after deducting depreciation and renewals, there being an actual balance of revenue over expenditure of £6,191 on a total revenue of £40,422. It is recalled that the Shamva Mines, Ltd., guarantee net earnings of £7,500 a year (before providing for depreciation) until April 22 next, so that the mining company for the past year has to contribute £1,308. The improvement in the position of the Mashonaland Railway Company is shown by the fact that the year gives a credit balance of £42,011, compared with a debit balance of £36,408 for the preceding year, and the deduction of the former amount from the accumulated debit balance leaves the latter at £1,633,215 as at September last. The directors announce a contract between the Union Minière du Haut Katanga and the Rhodesian Railway Companies for the carriage of large quantities of coal and coke from Wankie to the Congo border and copper from the Congo border to Beira during the period from June, 1922, to May, 1930. In this connection, notice should be paid to the great schemes in the Congo for the development of the Belgian railway system through from Katanga to the mouth of the Congo in the next few years.

Notes & News.

Aurora West.

The enthusiastic correspondent in our last issue who described the life of the Aurora West as "several years of rich reef," "plus another fourteen to sixteen years of unproved values," seems to have let his enthusiasm outrun his discretion. The life of the mine is certainly likely to be prolonged by reason of the reduction in working costs and the possibility of working lower grade ore, but our correspondent's estimate seems rather too optimistic.

* * *

Shamva Mines.

Mr. E. Bickenruth at the last Shamva meeting said, *inter alia*:—"In all the circumstances we have, I think, reason to be satisfied that, although we have had a troublous year, we were able to maintain our quarterly dividends at the rate of 30 per cent. per annum without drawing on our reserve, and yet to carry forward a substantial balance. Obviously our carry-forward from last year, added to the year's earnings, enabled us to do this, and in declaring dividends at the same rate for the past half-year we have followed the principle that shareholders are entitled to 'up to the hilt' distributions so long as there is no special reason for holding up more than is needed for the company's general purposes and for equalisation of dividends. We have, however, arrived at a stage at which it is necessary to take stock of our position and to decide on the policy to be pursued in the immediate future."

Union Miniere.

Speaking at the recent Union Minière meeting, Mr. Jean Jadot said, inter alia:—"An examination of the official publications giving the copper production and the balance sheets for 1921 of the large copper producing companies, in comparison with the results obtained by our own company, shows that (1) in 1921 the Union Minière was the largest copper producer in the world, and (2) that our operating accounts closed without loss, whereas all the other large copper producers show, without exception, very large deficits. For example, five of them show losses varying from [illegible] to [illegible] per cent. of their capital. These facts, of which you will appreciate the importance, are an indisputable proof of the privileged position occupied by our company in comparison with other copper producers, and of the important *rôle* which in the future it is destined to play in the copper industry of the world. This privileged position assures us of a remunerative return which will gradually increase as our output expands and the market price of the metal regains its level."

* * *

Igneous Rocks of Brazil and of South Africa.

Striking similarities in geological age and in composition exist between the old granites and gneisses with intrusive younger granites, the pre-Cretaceous intrusive sheets of diabase, the lava flows of the Serra Geral and the Drakensberg, the pipes and dykes of kimberlite, and the intrusive and effusive alkali rocks (nephelinesyenites and phonolites), according to a report that has been issued by the U.S. Geological Survey. The alkali rocks are found on both sides of the Atlantic Ocean near the coast; they form denuded volcanic centres, and if the west coast of Africa and the east coast of South America be considered in juxtaposition the location of these older volcanoes would be very similar to that of the young volcanoes of alkali rocks (Kenia) near the young fracture system, bordering the rift valleys in East Africa. Long dykes of nephelinesyenites prove the existence of similar fractures in the central part of South Africa.

* * *

Geological Society.

The next monthly meeting of members of the Geological Society of South Africa will be held in the main hall, 1st floor, Scientific and Technical Club, 100, Fox Street (between Rissik and Loveday Streets), Johannesburg, on Monday, 14th August, 1922, at 8.15 p.m. The following papers will be open for discussion. "Recent Additions to Our Knowledge of the South African Coalfields," by E. T. Mellor, D.Sc.; "The Konkip Formation on the Borders of the Namib, North of Aus," by P. F. W. Beetz, Ph.D.; "Note on *Pygocephalus* from the Upper Dwyka Shales of Kimberley," by Henry Woods, F.R.S. (communicated by A. W. Rogers, Sc.D., F.R.S.); "On the Marundites and Allied Corundum-bearing Rocks in the Leydsdorp District of the Eastern Transvaal," A. L. Hall, M.A., F.G.S. The following papers will be read: "The Dwyka Tillite near Palapye, Bechuanaland Protectorate," by H. B. Maufe, B.A., F.G.S. "South African Oolites and their Metamorphism," by R. B. Young, M.A., D.Sc. "On Occurrence of Lithomarge near Vereeniging," by R. B. Young, M.A., D.Sc. "The Alkaline Rocks of the Franspoort Line," by S. J. Shand, D.Sc., Ph.D. "A Remarkable Rock from the Pretoria Salt Pan," by P. A. Wagner, [illegible].

* * *

African Oil Corporation.

Prospecting work is still being carried out on the property of the African Oil Corporation, Ltd. When Mr. J. van Tijn, the Royal Dutch Engineer, left the Colony, an area comprising about [illegible] acres was accepted by him as containing payable oil shale in his estimate. This ground has been thoroughly tested by him, and was opened up by means of cuttings and drives upon three sides. It was, in fact, the same as had been opened up and tested before Mr. van Tijn's arrival in South Africa by the Consulting Engineer of the Corporation, Mr. A. S. Mills-Davies. The east boundary line of the area under discussion has been delimited by boreholes put down by both engineers. The contents of this area have been estimated by Mr. Mills-Davies at considerably over [illegible] short tons with an average yield of not less than [illegible] gallons of crude oil per ton. As he disagreed with Mr. van Tijn's view that a large portion of ground to the east of the accepted shale bearing area was rendered useless by the presence of masses of dolerite, he put down a borehole known as No. 8. This was completed a little while ago, and no dolerite at all was intersected. The geological horizon being thus elucidated, surface work was begun with the result that the shale-seam was struck, showing normal thickness and having a value of 40½ galls. over 18 inches on top and 15 galls. over 20 inches below, with a parting of 24 inches of "blaes" or poor shale between. This opening is about 1,000 yards east of the area accepted by Mr. van Tijn. The prospecting work which is now being carried out in the vicinity of borehole No. 8 is expected to throw quite a different light upon the ground which was turned down by him and to add a considerable tonnage to that already estimated. Some 30 tons of shale have lately been sent by Mail boat to England for the purpose of testing a reduction process which, it is hoped, will show itself to be well-adapted to the treatment of the shale. If this expectation is fulfilled, the cost of erecting a plant for its treatment would be much smaller than was estimated on the basis of the Scottish Pumpherston process, and the difference would greatly facilitate the coming problem of equipment.

REID BROS.
(S.A.), LIMITED.

Sole Agents for:

CARRON COY.—HAULAGE GEARS, Etc.
ANDERSON, BOYES & COY.—ELECTRIC COAL CUTTERS.
HARDY PATENT PICK COY.—"HARDIAX" AIR COAL CUTTERS.
BLANTYRE ENGINEERING COY.—SCREENING PLANT.
WM. ARNOTT & CO.—CORNISH AND LANCASHIRE BOILERS.
QUASI-ARC ELECTRIC WELDING APPARATUS.
SMALL & PARKES—BELTING, PACKING, Etc.
FINNEY PATENT HAND PUMPS.
WELDLESS STEEL CHAINS.
CHAPMAN DOUBLE BALL BEARINGS.

JOHANNESBURG.
P.O. Box 802 'Phones 6070/1
AND AT DURBAN.

BELL'S UNITED ASBESTOS (Lond.)
AFRICAN AGENCY, LIMITED,
Telephone No. 345, Central. 24-26, CHORLTON CHAMBERS, HARRISON ST., JOHANNESBURG. P.O. Box 2642.
SOLE AGENTS IN SOUTH AFRICA FOR
BELL'S UNITED ASBESTOS CO., LTD., LONDON.
(OLDEST ASBESTOS MANUFACTURERS IN THE WORLD).

VIEW OF GENERAL ABESTOS WORKS, HAREFIELD, MIDDLESEX.
"GLADIATOR" ASBESTOS CEMENT BUILDING MATERIALS.
Over 170 million square feet "Gladiator" Building Material supplied the British Government during the War for Army Hutments, Hospitals, Aerodromes, Munition Factories and the like.—Enquiries invited.

HADFIELDS Ltd.
Workmen employed during the war, over 15,000.
Works area over 200 Acres
East Hecla and Hecla Works, Sheffield, England.
COMPLETE STONE BREAKING AND ORE CRUSHING PLANTS
RENEWALS AND WEARING PARTS SUPPLIED FOR EVERY KNOWN MAKE OF MACHINE.

Mining Requisites
Special Forged Steel Balls for Ball and Tube Mills, Shoes, Dies, Grizzley Bars, Crushing Rolls, Jaw Faces, Cones, Concaves, Wheels and Axles, etc.

Manufacturers of
TRADE HECLA MARK
Steel Forgings in the rough, rough machined, or finished for marine and other engineering purposes, of any analysis and to pass any required test.
Steel Castings of every description up to 30 tons in weight.

ERA
Trade Mark
Sole Makers of HADFIELD'S PATENT
MANGANESE STEEL
The Supreme Material for the Wearing Parts of Stone Breaking and Ore Crushing Machinery, etc.

Head Office for South Africa:
46 & 47, CULLINAN BUILDINGS,
JOHANNESBURG.
Phone 5900. Tel. Add.: "Hecla."

Bulawayo Agents:
WHITMORE & JACKSON,
17 & 18, Agency Chambers.

Natal Agents:
THOMAS BARLOW & SONS (S.A.) Limited,
Smith Street, Durban.

The Geology of the Great African Rift Valley.

QUESTION OF ORIGIN OUTLINE OF GEOLOGY OF UGANDA AND EAST AFRICA—BRITISH AND GERMAN SCIENTISTS' VIEWS.

Under the auspices of the Geological Society of South Africa an interesting lecture on "The Lake Albert Valley and its Bearing on the Problem of the African Rifts," which was illustrated by lantern slides, was delivered at the Scientific and Technical Club on Monday, July 31, by Mr. E. J. Wayland, Government Geologist, Uganda, who is making a short stay on the Rand on his way back to Uganda. In the course of his remarks, Mr. Wayland said:—

Thirty years ago Professor J. W. Gregory undertook what was in those days a very remarkable journey from Mombasa across the Nyika and the lava plains of British East Africa to the enormous trench-like depression now known, as is the Professor's first book on that country, by the title of the Great Rift Valley. Gregory's book justly brought him considerable fame, for it took at once a prominent place among the records of scientific exploration.

Volcanoes that Border the Great Rift Valley of Central Africa.

The existence of the valley, or chain of valleys as the case may be, had already been pointed out by Süss in his "Das Antlig der Erde"—a work that is now a scientific classic—but the credit of first giving to the world a reasoned explanation of the geological conditions that gave rise to the African Rift Valleys is very largely due to Professor Gregory. In 1919 Gregory revisited East Africa, and early in the succeeding year read before the Royal Geographical Society a paper in which he again set forth and elaborated his views. Since then the Professor has published another book dealing with the same subject. Now, the remarkable distribution of certain fossils has led geologists to postulate the one-time existence of a continent (Gondwanaland), the major part of which is lost to us, but of which remnants are to be seen in parts of South America, South Africa, India and Australia. Professor Gregory's theory of the African Rifts is intimately associated with the disappearance of this continent.

In outline, Gregory's theory is as follows:—The subsidence of that part of Gondwanaland that is supposed to have occupied the site of the Indian Ocean led to the buckling up of Eastern Africa and to the extension of lavas in East Africa and India. The squeezing out of lavas from beneath the East African arches left them insufficiently supported below, and when, somewhat later, depression set in over the site of the present Pacific, tension was exerted east and west of the ocean and round the earth, thus causing the African arches (antipodally placed with respect to the Pacific) to crack, and the keystones, as it were, to drop in.

Professor Gregory's theory met with almost universal acceptance; it found its way into the school geographies, and a rising generation of geologists and geographers were taught that the Great Rift Valley extended from the Shiré to the Dead Sea. While the limits as at first laid down have suffered some alteration, particularly in Egypt, the original contentions have not been seriously challenged till quite recently. True there were those who, never having seen an African Rift, supposed the great trench-like depressions of this continent to be valleys of erosion, and Dr. Ball, in Egypt, has expressed doubts as to the existence of rifts as defined by Gregory, but the tension theory was not severely shaken, for there were few geologists qualified by their field experiences to attack it; moreover, its security lay in the obviousness of the proffered explanation. One should beware of the obvious, however; nothing could be more obvious than that the sun goes round the earth, but for all that it does not.

Origin of the Rift Valleys.

In the lecture delivered before the Geological Society, Mr. E. J. Wayland, Director of the Geological Survey of Uganda, explained his views with regard to the origin of the African Rift Valleys. The outlines of the Geology of the Protectorate were dealt with, and it was shown how the more important earth-movements of Uganda were related to those of East Africa. The details of mapping upon which much of Mr. Wayland's interpretations depended were undertaken by Mr. W. C. Simmons, the [illegible] to the Survey after the Director had made the preliminary reconnaissance. The work not only confirmed Mr. Wayland's original views but amplified it considerably and demonstrated that, so far as the Western Rift in Uganda is concerned at any rate, all evidence of tension [illegible], while there is much evidence to show that the rifts owe their origin to compression. The conclusion drawn is that the African Rifts were initiated by the thrusting up of the ground that now forms the valley sides, and that the sinking of the floor that may have subsequently taken place is a secondary phenomenon. Mr. Wayland produced illustrations showing how rift valleys and block-mountains have been produced experimentally in timber and iron. A block-mountain, of which Ruwenzori is an example, is, according to the lecturer's hypothesis, a rift valley upside down. It is interesting to note that gravity experiments carried out by the Germans in the Tanganyika area, before the war, support Mr. Wayland's theory. As the lecturer went to Uganda straight from the Western Front he had no time to study the scientific literature of the territories surrounding Uganda, and so when he first propounded his theory was unaware of Kohlschütter's results: indeed it was Mr. R. D. Oldham, late Director of the Geological Survey of India, who, in the *Geographical Journal* of February, 1922, called Mr. Wayland's attention to the German's work, while this comes in as independent evidence from investigations of an entirely different nature.

Summary of Views.

The lecture was summed up as follows:—

"(1) Secular movements, possibly associated with the initial subsidence of Gondwanaland, resulted in large scale faulting. In Uganda, at any rate, some of the faults are proved to be reversed. Their general direction of trend is approximately N.N.E.

"(2) The main subsidence of Gondwanaland, in late cretaceous times, resulted in the doming of East Africa, and the extrusion of the Kapitian lavas; while the movement expended itself westward in the formation of a number of parallel domes of comparatively small size in Uganda. The initial rise of Ruwenzori may have taken place at this time along pre-existing faults.

"(3) After a long period of rest, during which the arena-like topography that characterises the remains of the parallel domes was far advanced, compression again became operative in oligocene times. This led to fracture of the Kenyan dome; while the same initiating movement, less violent in the west as before, resulted in the buckling of Uganda that is evinced by the Uganda-Congo dome and the Victoria basin. With this movement the main rise of Ruwenzori was probably contemporaneous.

"(4) Water accumulated in the basin and rose to a considerable level, at which it remained during Miocene and possibly early Phiocene times. The work of this giant lake—the Buganda Sea—is to be seen in the peneplain that now surrounds Lake Victoria.

"(5) Compression reasserting itself in Pliocene times set up enormous stresses that were relieved by the fracture of both domes. The fractures were of the nature of parallel reversed faults that manifested themselves in accordance with the laws of molar response of dense materials under compression, and resulted in the rise of opposing scarps. This same compression initiated a glide across the rift by way of an old fault favourably placed, and also caused the western fault of Ruwenzori to function afresh. Movements also took place, either at this period or somewhat later, along the eastern block fault of the range, thereby producing relative downthrow on the western side of the fault.

"(6) North-north-easterly compression, acting more or less simultaneously with the scarping pressures, staggered the Tanganyika-Nile rift and led to a certain amount of folding at right angles to the scarps. A downfold thus produced in Bunyoro caused the draining of the Buganda Sea and the exposure of the peneplain.

(7) The climatic conditions of the Pleistocene period were responsible for a rise of the equatorial lakes. During this time the surface of the Victoria Nyanza stood temporarily at a point about 300 feet above its present altitude and 400 feet below the level of the Buganda Sea.

(8) It may be added that the probabiltiies are that most, if not all, of the bottoms of the African Rift valleys have sunk since the sides were thrust up, for the structure of a rift valley, according to my hypothesis, is such that sinkage of the floor is almost bound to occur at some time or other."

In conclusion, Mr. Wayland said: "I wish to insist that the views I have put before you constitute an hypothesis—nothing more. Till quite recently the tensional theory rested secure in the want of constructive criticism. If my work has taken some of the gilt-edge off that security, it has also, I hope, shown how little we know about rift-valley tectonics, and indicated that, in addition to discussion, much more work is required.

It is of little use to convince ourself of what must have happened, and then look for evidence; nor need one be rigorous about causes till the careful collection and study of facts has shown us what has actually occurred.

The nature and distribution of the African Rift Valleys indicate the importance of the geological problems they set us, and some time must elapse before these are solved to the satisfaction of everybody. Meanwhile indications are not wanting that our treasured belief in some of the "romances of geology" may be rudely shattered. It may well be that Gondwanaland had no separate existence, and that Wegener is right when he maintains that the continents have drifted apart. If so, it is by no means impossible that the African arches are in a sense compression waves set up by a westerly resistance to continental drift and that the rift faults that traverse them are relief fractures due to the same cause."

TRANSVAAL SILVER AND BASE METALS.

The output of this company for July totalled 321·3 long tons of lead bullion, containing 31,064 ounces of fine silver, representing a total value, at to day's prices of the metals, of approximately £12,840.

MODDERFONTEIN DEEP LEVELS.

The report of the Directors for the quarter ended 30th June, 1922, shows that the total development footage was 913 feet; total footage sampled, 665 feet. The payable reef disclosures were as follows: 480 feet, having an average assay value of 14.6 dwts. over 48 inches. The total profit was £188,331 11s. 1d.

The above amount of working revenue has been arrived at by taking the gold produced during the quarter at the following estimated prices per fine ounce: April, £4 12s.; May, £4 12s.; June, £4 12s. 6d. Estimate of normal income tax, £13,800; tax on dividend No. 15, £20,270 5s. 5d.; mine development redeemed in excess of expenditure, £5,279 8s. 11d.; purchased ex-enemy shares—estimate of commission and other expenses, £6,000.

GEDULD PROPRIETARY MINES.

The report of the Directors for the quarter ended 30th June, 1922, states that the total development footage was 4,182 feet; total footage sampled, 2,475 feet. The payable reef disclosures were as follows: 1,215 feet, having an average assay value of 19.8 dwts. over 39 inches. The total profit was £88,722 2s. 7d.

The above amount of working revenue has been arrived at by taking the gold produced during the quarter at the following estimated prices per fine ounce: April, £4 12s.; May, £4 12s.; June, £4 12s. 6d. Normal income tax (estimate), £5,600; tax on dividend No. 15, £6,729 19s. 10d.; capital expenditure, £33,755 2s. 11d.; excess development expenditure, £3,765 19s. 1d.; purchased ex-enemy shares—estimate of commission and other expenses, £10,000.

July Output: Group Returns.

SUBSTANTIAL INCREASE IN PROFITS AND SAVINGS EFFECTED.

CENTRAL MINING/RAND MINES GROUP.

The following are the results of operations at the mines of the Central Mining Rand Mines group for the month of July, 1922.

Company	Tons Crushed	Yield in Fine Gold oz.	Estimated Value	Estimated Profit	Estimated Working Costs per Ton
City Deep ...	88,500	38,480	£173,639	£66,712	24 2
Con. Main Reef	52,100	20,424	92,162	23,781	26 3
Crown Mines .	214,000	62,572	282,356	67,690	20 0
Dur. Rood. Dp.	31,000	10,731	48,424	7,398	26 5
E.R.P.M. ...	119,000	30,559	137,900	7,937	21/10
Ferreira Deep	30,500	8,637	38,976	5,397	22/ 0
Geldenhuis Dp.	53,222	13,847	62,485	3,786	22 0
Knight Central	32,000	6,447	29,046	1,246	17/ 4
Modder B. ...	62,000	34,379	155,929	86,945	22 3
Modder East..	26,300	10,713	48,115	9,049	29 8
New Modder ..	108,000	49,656	224,074	127,933	17 9
Nourse Mines.	47,700	14,753	66,572	8,824	24/ 2
Robinson . .	17,000	5,687	25,660	9,692	18 9
Rose Deep ...	50,500	12,625	56,714	8,488	19/ 1
Wolhuter	33,700	8,010	36,022	3,665	19 2
Village Deep .	54,600	17,667	79,721	15,001	23/ 8
Tls. & averages	1,020,122	345,187	1,557,795	453,544	21/ 7

Consolidated Main Reef.—The extraordinary profit is due to temporary abnormal grade combined with increased tonnage and reduced cost.

General Note.—The valuation of gold has been taken at £4 10s. 3d. net.

CONSOLIDATED GOLD FIELDS.

The following are particulars in regard to the outputs of the producing mines of the Consolidated Gold Fields group for the month of July.

Company	Stamps Running	Tube Mills Working	Tons Crushed	Gold Declared Fine ozs.	Total Profit Declared, including Sundry Revenue
Simmer and Jack.	320	7	48,800	10,735	*£2,129
Robinson Deep	160	10	68,400	20,963	30,084
Sub Nigel . . .	30	2	10,400	5,970	5,420
Totals	510	19	127,600	37,668	£33,375

* Loss.

Gold in Reserve.—Robinson Deep 3,778 oz.; Sub Nigel 2,000 oz.; total, 5,778 oz.

The revenue derived from gold for the month of July is calculated at the rate of £4 12s. per fine oz., less estimated gold realisation and exchange charges of 1s. 6d., or a net figure of £4 10s. 6d. per fine oz.

Robinson Deep.—Increased profit due to higher tonnage crushed.

Simmer and Jack.—It is estimated that improved results should be obtained after the middle of August, when it will be possible to crush a more normal tonnage.

GENERAL MINING AND FINANCE CORPORATION.

The following are the results of operations at the mines of the General Mining and Finance group of companies for the month of July.

Company	Tons Crushed	Total Cost	Cost per ton.	Total Revenue	Profit
Aurora West ...	9,500	£11,381	23·96	£13,093	£1,712
Meyer & Charlton	15,000	16,387	21·85	38,635	22,248
New Goch .	17,500	16,738	19·13	17,741	1,003
Roode. United ...	8,650	9,225	21·33	8,245	*980
Van Ryn Estate	34,300	35,816	20·88	44,885	9,069
West Rand Cons.	34,500	40,469	23·46	44,677	4,208
	119,450	130,016	21·77	£167,276	£38,240
				Less loss	980
					£37,260

Company Total Revenue £ Profit £

In calculating the revenue, gold has been taken at a value of 92s. per fine oz., less estimated realisation charges.

Roodepoort United.—Mining operations have now ceased.

OSBORN'S SPECIALITIES.

A Few of Them:

"MUSHET"
THE ORIGINAL HIGH-SPEED.
STEEL,
CAST TOOL STEEL,
DRILL STEEL, - NICKEL STEEL,
SPRING STEEL,
RUSTLESS STEEL,
GRIZZLEY AND TUBE MILL BARS.

— GET THE BEST —
FROM
SAMUEL OSBORN (S.A.), LTD.,
Box 3162 JOHANNESBURG. 'Phone 4673
WORKS: CLYDE STEEL WORKS, SHEFFIELD

BARNATO GROUP.

The following are the results of operations at the Barnato group of mines for the month of July:—

Mine.	Tons Crushed.	Revenue from Gold. £	Total working Costs. £
Consolidated Langlaagte	41,100	53,345	42,011
Government G.M. Areas	141,000	283,025	129,825
Langlaagte Estate	49,350	66,047	51,857
New Primrose	19,100	19,490	18,009
New Unified	11,200	12,148	10,140
Randfontein Central	133,500	189,616	145,811
Van Ryn Deep	55,000	120,865	58,434
Witwatersrand	46,200	53,845	42,350
Totals and averages ...	£496,450	£798,381	£499,337
June totals	£461,800	£764,929	£488,742

Mine.	Working Costs per Ton Milled. Shillings.	Gross Profit including Sundry Revenue. £
Consolidated Langlaagte	20·881	10,687
Government G.M. Areas	18·414	133,899
Langlaagte Estate ...	21·016	14,459
New Primrose	18·858	1,649
New Unified	18·108	2,066
Randfontein Central	21·844	45,025
Van Ryn Deep	21·249	63,000
Witwatersrand	18·333	12,255
Totals and averages	20·116	£303,040
June totals	21·167	£281,996

The above results are arrived at by calculating the gold at £4 12s. per fine oz.

CONSOLIDATED MINES SELECTION GROUP.

The following are the results of operations for the month of July, 1922:—

	No. of Stamps Working	Tons milled	Working Costs per ton milled s.	d.	Value of Gold Declared £	Yield per ton s.	d.
Brakpan	130	64,500	22	9·0	£110,537	34	3·3
Springs	80	41,400	24	11·0	80,975	39	1·4
Totals & averages	210	105,900	23	7·1	£191,512	36	2·0

	Working Profit based on standard value of Gold: Total £	per ton s.	d.	Estimated Premium taking gold at £4 12s 0d per fine oz. Ex. less Exchange on Remittances £	Total Estimated Profit £
Brakpan	£37,178	11	6·3	£8,103	*£75,611
Springs	29,405	14	2·4	5,666	35,071
Totals and averages	£66,583	12	6·9	£13,769	£110,682

* Includes £30,330, gold from strike clean-up, *vide* Directors' report.

WIT. DEEP: JULY RETURNS.

The estimate of results for the month of July, 1922, is as under:—Tons milled, 42,350; gold recovered, 12,997·255 oz.; average of stamps running, 180; stamps running time, 26·944 days; tube mills, 5. The working expenditure, including head office charges for the month, is £44,384, or 20s. 11d. per ton. The estimated working revenue based on an estimate of £4 12s. per fine oz. (less 1s. 9d. realisation charges) is £58,650, or 27s. 8d. per ton. The net estimated working profit is £14,266, or 6s. 9d. per ton, from which is to be deducted the capital expenditure for the month of £606, leaving a surplus of £13,660.

UNION CORPORATION GROUP.

The following are particulars of the operations on the producing mines of the Union Corporation group for the month of July, 1922:—

Company.	Stamps.	Tons Crushed.	Fine Ozs.	Revenue (Including Sundry Rev.) Total	Per ton s. d.
Geduld Proprietary	100	46,300	16,359	£75,853	32 9
Modder Deep	70	43,200	23,408	106,827	49/5
Totals and averages	170	89,500	39,767	£182,680	40 10

Company.	Costs. Total	per ton s. d.	PROFIT. including Sundry Rev. Total.	per ton.
Geduld Proprietary	£45,735	19 9	£30,118	13 0
Modder Deep	40,570	18/9	66,257	30/8
Totals and averages	£86,305	19 3	£96,375	21 7

The above results are arrived at by valuing gold at 92s. per fine oz. Realisation charges in excess of normal are debited direct to revenue.

GLYNN'S LYDENBURG.

The following are the particulars of the output for the month of July, 1922, in respect of the above company:—Tons crushed, 3,276, yielding 1,409 fine oz.; estimated value of month's output, £6,662; estimated profit for month, £1,343. The above figures are exclusive of expenditure for the month upon shaft sinking, special development and capital expenditure amounting to £1,187. The gold output for the month is valued at £4 10s. per fine oz. net, after allowing for exchange and realisation charges.

TRANSVAAL G.M. ESTATES.

The following are the particulars of the output for the month of July, 1922, in respect of the above company:—Central Mines: Tons crushed, 12,400, yielding 3,412 fine oz. Elandsdrift Mine: Tons crushed, 1,740, yielding 1,158 fine oz. Vaalhoek Mine: Tons crushed, 1,800, yielding 662 fine oz. Estimated value of month's output, £23,623; estimated profit for month, £245. The gold output for the month is valued at £4 10s. per fine oz. net, after allowing for exchange and realisation charges.

S.A. COAL ESTATES (WITBANK), LTD.

Report of operations for the quarter ended June 30.—Output, 138,548 tons; estimated profits, £15,000. Laudau Pit.—Work has proceeded very satisfactorily; conditions underground continue good. Navigation Pit.—Work has gone on well, and the erection of a full screening plant is practically completed. Development has satisfactorily advanced, and the coal continues to be of good quality.

Transvaal G.M. Estates.

The following is a copy of a cablegram sent to London on August 10.—"Elandsdrift Mine: Fourth level drive has penetrated blow 80 feet; values irregular, but on the whole high grade. Face of drive is still in good values. Crosscut extended 10 feet each way from drive; both ends in good values. Enriched zone is about 6 feet thick. Winze sunk on blow 100 feet from point of enrichment shows no values over 30 feet sunk. Directors desire to reiterate insufficient work done so far to establish that occurrence is of any magnitude."

Letters to the Editor.

GOLD IN TANGANYIKA TERRITORY.

To the Editor, S.A. *Mining and Engineering Journal.*

Sir,—I note in your issue of 5th August last an article on page 1626 headed "Gold Discoveries in Tanganyika Territory," wherein, *inter alia*, the following has been taken over from the *Dar-es-Salaam Times*:—"It is interesting to learn that the Corner House group, the biggest and most influential mining group in South Africa, are taking an interest in this country's mineral wealth. Two of their representatives, one of whom is Dr. Merensky, the well-known geologist, were here recently on a visit through certain portions of the territory." Please take note that this information is not consistent with facts. We were up there in the interests of other parties, not for the Corner House, and I shall be glad if you will insert the necessary correction in your next publication. Thanking you in anticipation.—Yours, etc.,

H. MERENSKY.

[We understand that Dr. Merensky was representing a London-Capetown group in East Africa.—Ed.]

AURORA WEST UNITED'S BRiGHTER PROSPECT

To the Editor, *S.A. Mining and Engineering Journal.*

Sir,—I have overheard several people discussing my letter, published by you last Saturday, and there seems to be an impression created that there is 14-16 years of *proved* payable ore in this mine. This is hardly what I intended to prove, but if we take 100 *Reef* claims, which probably contain 40,000 tons per claim, out of which some 2,000,000 tons have been milled, then there are 14-16 years of ore within this mine, but the actual proportion of this that is payable has yet to be proved. Anyhow, there are a few years' ore proved that will yield profits, plus more, as the costs come down, and perhaps the experience of the Unified will be repeated here, and a much longer life secured than we now anticipate. More than this we can hardly say, even in regard to some of the more highly developed properties. It is pleasant news indeed to note the fact that this mine is at last going to "make good," and give returns to the shareholders.—I am, etc.,

VALUATOR.

THE IRONSTONE OF THE PRETORIA SERIES.

To the Editor, *S.A. Mining and Engineering Journal.*

Sir,—Perusing the report of Messrs. Percy A. Wagner and G. H. Stanley for the S.A. Iron and Steel Corporation, Ltd., published in your last issue, they allude to the silicious ironstone of "the Pretoria series" as developed between Potchefstroom and Frederikstad.

Pretoria series, indeed! The Gats Rand, that's what it is, and contains the iron crown of the Black Reef series, which the Geological Survey persistently ignores, and that iron above its dolomites is part and parcel of the top beds of the richest auriferous age in the country. Don't they wish they may get it, and shift it over to Pretoria to make it one with their common or garden Lydenburg age, on which the city is built! The Rustenburg Rand, as drawn attention to by the *Rand Daily Mail*, Pretoria may justly claim, and the iron therein contained, as the Magaliesberg Range is a duplication of it; but hands off the Gats Rand, please, for that is a horse of another colour, as I have warned the Survey and others before to-day.—Yours, etc.,

SCOTT ALEXANDER,
"Rand Stratigraphist."

Johannesburg, Aug. 9, 1922.

COST PER OZ. WON versus COST PER TON MILLED.

To the Editor, S.A. *Mining and Engineering Journal.*

Sir,—The gold mining industry has had to thank America for many things. The Californian stamp mill denotes its origin. The apex mining law in use in Rhodesia was introduced by Cecil Rhodes, an alumnus of the American mining engineer. The Block Claim system on this line of Reef is based on the European practice. The apex law provides that the claim-holder who owns the outcrop [illegible] to dig out on the dip of his reef, although his extensions on the strike may be pegged by others. The Block Claim system we know to be more scientific and in the hands of an unscrupulous promoter is a patent factor to fraudulent company promoting. For instance, a mine claim in the City Deep, whence the dip is about 45 degrees, can hold 50 per cent. more reef than a claim at Brakpan, where the dip is nil, or practically flat. So a company prospectus offering 40,000 claims of 20 dwt. value is quite a different proposition if the claims are situated either at Randfontein or Springs. The apex law to-day is the better, for since the famous mining litigation case of the John Bull Syndicate versus the Globe and Phoenix Company the law of apex is firmly constituted. The object of this brief essay is to show how gold mining and the laws governing it are intended to make the business highly speculative and highly problematical, despite the declarations of the manipulators and the present exploiters of our gold mining industry. The cost per ton milled is an American idea that answered very well for a copper proposition and was handy being based on the metric system of calculation. A 6 per cent. copper proposition meant that 6 per cent. of the tonnage was copper recovered and saleable at the current price of copper. Thus it was that big tonnage idea was introduced to cut overhead expenses, e.g. the first 20,000 tons milled in a crushing plant, say, cost 25s. per ton working cost—it is logical to infer that the second 20,000 can be treated at, say, 20s. per ton. Good practice and good reasoning for a copper mine. But when this system has been translated to gold mining it has had disastrous results. If our mine managers would devote the same energy to diminishing the cost per oz. of gold won as they do to the cost per ton milled, our industry would be happier to the shareholder and white worker alike. On this line of Reef the product the shareholder sells is the oz. of gold, not the ton of residue dumps. To ascertain how this big tonnage stunt works, it is only necessary to consult the ordinary mine trammer; he will tell you he has been ordered "to tram anything that will help make up a ton." Thus waste rock is introduced. The miner when stoping has been ordered to increase the stoping width in order to increase the tonnage. Now how does this pernicious tonnage system affect our national industry. General Smuts' policy is to make gold mining a semi-savage semi-skilled occupation. His mind working on the tonnage basis has functioned logically. Had his premises been the cost per oz. won his astute mind would realise that gold mining should advance on the line of a highly skilled white workmanship occupation instead of diluting the mine labour force with tropical savage labour, as his false premises have trapped him into doing.—Yours, etc.,

L. P. SHERIDAN.

[Our correspondence columns are, of course, always open to the expression of views from our readers, but it should be pointed out that the alleged instructions of the "ordinary mine trammer" are not evidence, and that Mr. Sheridan's deductions are peculiarly his own.—Ed.]

WEST END DIAMONDS.

Loads washed during the quarter, 49,369, roughly estimated at 15 per cent. overburden and 55 per cent. yellow. Yield, 3,325 carats, valued at £9,575. The mine continues to open up well. The amount of overburden still continues to restrict washing operations, but is gradually getting less, and more clean ground will be [illegible].

To Lower your Operating Costs:

A Lubrication Audit

Business to-day protects itself against waste and inefficient methods——by audit.

An audit gives an exact picture of present conditions, and points the way to improvement.

We would like to call to your attention the possibilities of a Lubrication Audit in your plant.

See details in column.

Only a Lubrication Audit can give you full information, and open the way to new economies which will soon be reflected in lower operating costs.

Present industrial conditions make it urgent that you take this step toward improved results at once. Ask our nearest branch to-day about the Lubrication Audit.

GARGOYLE

Lubricants

A grade for each type of service

THE LUBRICATION AUDIT

Explained Step by Step (in condensed outline)

INSPECTION: A thoroughly experienced Vacuum Oil Company of S.A. Limited, representative in co-operation with your plant engineer or superintendent makes a careful survey and record of your mechanical equipment and operating conditions.

RECOMMENDATIONS: We later specify in a written report, the correct oil and the correct application of the oil for the efficient and economical operation of each engine and machine. This report is based on:

(1). The inspection of the machines in your plant.
(2). Your operating conditions.
(3). Our 25 years of lubricating experience with all types of mechanical equipment under all kinds of operating conditions.
(4). The outstanding experience of the Vacuum Oil Company in manufacturing oils for every lubricating need.

CHECKING:—If, following our recommendations in this audit, you instal our oils, periodical calls will be made to check up the continuance of the desired results.
For the above Free Service address our nearest branch office.

BRANCH OFFICES:

Cape Town
Kimberley
Port Elizabeth
Johannesburg
Bloemfontein
East London
Lourenco Marques.
Pretoria
Mossel Bay
Durban

VACUUM OIL COMPANY OF SOUTH AFRICA, LTD.

SOUTH AMERICA

HEAD OFFICE:
MONTREAL, CANADA

We offer a complete banking service in the following countries, special attention being given to the handling of collections.

ARGENTINE
Buenos Aires
2 Branches

BRAZIL
Rio de Janeiro, Santos,
Sao Paulo.

URUGUAY
Montevideo

VENEZUELA
Caracas, Ciudad Bolivar,
Maracaibo.

COLOMBIA
Barranquilla.

BR. GUIANA
Georgetown, Rose Hall,
New Amsterdam.

Also 90 Branches in
CUBA, PORTO RICO, DOMINICAN REPUBLIC, HAITI, COSTA RICA, BR. HONDURAS, BRITISH WEST INDIES and FRENCH WEST INDIES

614 Branches throughout CANADA & NEWFOUNDLAND

LONDON
Princes St., E.C.

PARIS
28, Rue du Quatre-Septembre.

NEW YORK
68, William St.

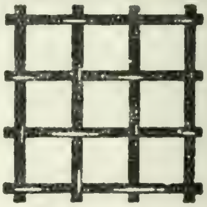
BARCELONA
Plaza de Cataluna 6.

THE ROYAL BANK OF CANADA

CAPITAL PAID UP & RESERVES $41,000,000
TOTAL RESOURCES - - $500,000,000

SCREENING

Order No	Gauge	Space. Inch.
S2031	20	3/8
S2032	18	
S2033	16	
S2034	15	
S2035	14	
S2036	12	
S2037	10	



2½ Mesh, No. 16, Steel.

Ask us for quotations for all kinds and sizes of Screening; made in our own factories, and promptly delivered.

The S. A. Wire Co., Ltd.

P.O. Box 651, Durban.

SUCCESSFUL
FINANCIAL PUBLICITY!

CONSULT
THE TECHNICAL PUBLICITY AGENCY.

Advertising Advisers, Contractors and Consultants. Specialised, Concentrated, Wasteless, Advertising Service.

Complete Advertising Campaigns Planned and Handled. "Copy" Prepared. Best Media Chosen. Lowest Prices and Best Positions Secured.

Company Flotations a Speciality.

Phone 913. Box 3723.
177, STOCK EXCHANGE, JOHANNESBURG.

The Week in the Sharemarket.

STRONG AND ACTIVE—GOOD JULY RETURNS AND BETTER AUGUST PROSPECTS—HEALTHY UNDERTONE.

The market during the week has continued firm and very active, particularly in the smaller descriptions. When comparing the June costs with those of July it will be seen that in practically every case there has been a reduction, and in many cases a very marked reduction. As a fall in this item means so much to the life of the Rand in bringing into the zone of payability many millions of tons of hitherto unpayable ore, it is not altogether surprising to find that the public are interesting themselves in what has hitherto been known as "rubbish." But this same "rubbish" has now become worthy of careful thought from an investment point of view. The selling from London has to some extent eased off, and although they still continue to buy our better-class stocks from overseas, there is now some slight indication of purchasing of smaller stocks, which up to the present they have been selling. Our information indicates that the profits for August will even exceed those for July, and our remark of last week with regard to increasing efficiency is undoubtedly correct. Although fluctuations due to profit-taking will undoubtedly occur the undertone of the market is strong and healthy, and we see no reason for anticipating a break for some time to come, particularly in view of the satisfactory Irish news and the probability of some arrangement being made with regard to European finances, which, though possibly temporary, would have a good effect in the meantime. Among market favourites which appear to have some backing to them may be mentioned Village Deeps and T.G.M.E.'s.

	Fri. 4th.	Sat. 5th.	Tues. 8th.	Wed. 9th.	Thurs. 10th.
Anglo-American Corp.	21 9	[illegible]	21 [illegible]	21 10	22 0
Apex Mines			7 [illegible]	6 [illegible]	
Aurora Wests	[illegible]		[illegible]		[illegible]
Brakpan Mines	51 6	52 3*	[illegible]	55 0	[illegible]
Cinderella Consolidated	3 3	3 6	3 3	3 0*	3 4
City and Suburbans	2 1			2 3*	2 0
City Deeps	52 3	52 3	54 [illegible]	55 [illegible]	53 0
Consolidated Diamonds	15 [illegible]	15 1	15 3	15 [illegible]	15 1*
Consolidated Investments	24 0*	2[illegible] 0*			
Consolidated Langlaagtes	14 9*	[illegible]	[illegible]	15 0*	15 0*
Consolidated Main Reefs	16 [illegible]	1[illegible] 3	1[illegible] [illegible]	15 7½	15 0
Con. Mines Selection	14 0	14 0*	14 [illegible]	14 0	14 6
Coronation Freeholds		0 9*			1 0†
Coronation Syndicates	5 0	4 10	[illegible]	4 10	4 1*
Crown Diamonds	6 [illegible]	6 1*	6 1*	6 1	6 2
Crown Mines	48 9	48 0		48 6	50 0
Daggafontein Mines	3 9	[illegible]	[illegible]	4 0	4 0
East Rand Deeps	0 9*		—	0 11*	
East Rand Minings	11 6†		[illegible]	10 6*	
East Rand Proprietary	11 9	12 [illegible]	12 [illegible]	13 4	12 3
Eastern Golds		[illegible]	0 [illegible]	0 7*	0 7*
Ferreira Deeps	—				1 1*
Frank Smith Diamonds	3 9	3 6	3 9*	3 6*	3 6*
Geduld Proprietary	66 0	6[illegible] 9	[illegible]	66 3	66 3*
Geldenhuis Deeps	5 0		5 7	5 9*	
Glynn's Lydenburgs	15 0†	15 0†	14 0†	14 3	14 0*
Government Areas	100 0	100 6	102 3	103 0	102 0
Hume Pipes	13 0†	13 0†	13 [illegible]		11 0*
Knight Centrals	4 6*	5 0	[illegible]	5 1	4 10*
Lace Props	10 0	10 6	11 [illegible]	11 3*	11 6
Leeuwpoort Tins	6 0	6 6*	[illegible] 10	6 6	6 6*
[illegible] Estates	4 6*	4 [illegible]	4 [illegible]	4 3*	5 6*
Lydenburg Farms	4 [illegible]	4 9	5 0	5 0	4 9*
Meyer and Charltons	70 0†	70 0*		70 0†	70 0
Middelvlei Estates	1 9	2 9*	[illegible]	2 0†	2 0
Modder B's	34 6	34 7	34 9	35 0	34 9
Modder Deeps	44 3	44 9	44 9	45 0	45 0
Modder Easts	8 [illegible]	8 6	8 6	8 7½	8 7
Natal Navigation Collieries	27 6*	29 0†	27 [illegible]	29 0†	29 0†
National Banks	220 6*	215 0†	220 0†	215 0†	
New Eland Diamonds	33 6*	35 0*	[illegible]	33 6*	33 6*
New Era Consolidated	6 9*	6 6*	6 9	7 0	7 9*
New Geduld Deeps	1 6*	1 6		1 [illegible]	1 6*
New Kleinfonteins	8 4	8 9	8 9*	10 0	10 6
New Modderfonteins	77 6	79 0	[illegible]	80 6	81 0
New Primrose	4 6*		6 [illegible]	6 0	[illegible]
New Unifieds		5 0	5 6*	5 0	6 0†
New State Areas		33 3	[illegible]	[illegible]	33 0
Nigels	7 6*	7 3			
Nourse Mines	16 9	16 [illegible]	17 0	16 10	16 10*
Pretoria Cements	15 6*	14 6	15 0	15 0	—
Rand Collieries					1 0
Rand Nucleus	1 3*	1 3*	1 3*		1 4
Randfontein Centrals	15 6	14 6	14 6	[illegible] 3	14 6*
Randfontein Estates	20 7½	21 4½	22 3	22 9	22 4
Rouxville Diamonds		1 3	1 4	1 4	—
Roberts Victors	8 6†	8 0	8 3†	8 6	8 6†
Rooibergs	[illegible]	[illegible] 3*	3 0*	[illegible]	
Ryan Nigels		4 0†		4 3*	—
Rose Deeps	13 6*	15 0		14 6*	14 6*
Sumner and Jacks	4 2	4 2	4 2	4 [illegible]	4 4
S.A. Breweries	26 0*	—	29 6*	27 0*	—
S.A. Lands	[illegible] 8	5 8	5 9	5 10	5 10*
Springs Mines	46 3*	46 9	47 0*	47 3	47 6
Sub Nigels	13 9	13 6	13 9	13 7½	13 3*
Swaziland Tins	—	5 6*	5 0*	5 6*	5 6*
S.A. Alkali	15 9*	17 0†	16 0	15 9	[illegible]
S.A. Townships	10 3	10 6	10 6*	10 6*	10 [illegible]
Transvaal Lands	15 0†			15 6	
Transvaal G.M. Estates	14 6	14 0*	15 0†	14 0*	—
Transvaal Silvers	14 3	14 3	14 3	14 3	14 3
Tudors	0 6*		0 9	0 8*	0 8
Van Dyk	0 11*	—	1 3*	1 6	1 6
Van Ryn Deeps	69 0	69 0	69 6	69 3	69 3
Village Deeps	14 6	14 9	14 9	15 0	15 0
West Springs	14 3	14 6	14 9	14 10	14 10*
West Rand Consolidated	5 0	5 3*	5 3*	5 3	5 3
Western Rand Estates	5 3	5 6	6 0	6 3	6 3
Witbank Collieries	37 6†	37 6†	40 0*		
Witwatersrands	16 9*	16 3	16 0*	16 3	16 3
Witwatersrand Deeps	17 6	18 0†	18 0†	17 6	17 [illegible]
Zaaiplaats Tins	2 3*	2 3†	2 3*	2 3	2 [illegible]
Union 5 per cent.	£101½*	£101½*	£100†	£102*	£10[illegible]

* Buyers. † Sellers.

The July Output

The official figures issued on Thursday by the Transvaal Chamber of Mines for the month of July prove that the gold industry is now getting back to normal conditions, and that the slight increase in native labour has shown a satisfactory result. The Witwatersrand shows an increase over June of 55,036 oz.; there was a decrease of 98 oz. in the outside districts, the value being £3,360,921, or an increase of £235,822. The realisable value per oz. was 92s. or 6d. per oz. less than that for June and 1s. per oz. below the value for May. Out of 39 properties on the Witwatersrand only four have shown a decrease, and this but to a small amount in the case of a couple of big mines. A noticeable increase is that of the Crown Mines, with 9,627 oz., which is rapidly getting back to original conditions. Randfontein with 5,935 oz., makes a good second, although the increase recorded by Brakpan is 6,987 oz. This figure, however, is explained by the fact that the increase over June is given as 487, but to this has been added 6,500 oz., as the result of what is described as the strike clean up.

The figures are as follows:

Total output	730,635 oz.
Increase over June	54,938 oz.
July value	£3,360,921
June value	£3,125,099
Witwatersrand	713,068 oz.
Increase over June	55,036 oz.
Outside districts	17,567 oz.
Decrease for July	98 oz.

The Cyanide Process.*

STORY OF ITS DEVELOPMENT.

How Inventive Genius was Inadequately Rewarded.

(By Alfred James.)

Progress in the development of the metallurgy of gold and [illegible] in 1921 and I have therefore [illegible] this letter to a consideration of what it really means to establish an improvement in practice. A [illegible] will focus attention to the difficulty encountered by almost every keen enthusiastic inventor: that of finding sufficient financial support. A patent for however brilliant or useful an invention is likely to be regarded by capitalists as a gamble rather than an investment. But the inventor is none the worse for having to rely mainly on his own resources, even for the development of a world-famous invention. It is indomitable keenness, proof against all discouragement, that develops grit and results of practical value.

History shows that the royalties derived from even the greatest epoch-making invention are usually small recompense for the ingenuity, skill, patience, investigation, determination, cheery optimism, work and capital expended in bringing the invention to a successful issue, and in, what is still more, forcing its adoption on a public which generally requires some years of education as to the advantages to be gained. Hence it generally happens that the fourteen years' protection granted in England on an epoch-making invention covers little more than the period of incubation, nursing and developing to adolescent capacity.

Epoch-making Inventions.

Possibly the epoch-making inventions of the day are propulsion of vessels by steam turbines, radio-telegraphy, airplanes, and wave transmission of power. To discuss the first: After fourteen years of incessant effort and skilful striving, Parsons found himself at the end of his patent life with little more than his expenses. The history of Marconi is widely known. It was not until after many years of ceaseless ingenuity and untiring brilliant invention that the shareholders financing Marconi received a single penny on their money invested. The Wright brothers were never reported as entertaining royalty or as marrying European princesses, and I understand Constantinescu has not yet received serious reward for the civil use of his inventions.

But apart from the smallness of the remuneration, another feature stands out strongly: that but for the invincible enthusiasm and dogged determination of the inventor every improvement would be the failure in practice it is at first almost universally pronounced to be by those learned in the art. It is, therefore, of the utmost value to the industry that the connection of the inventor with the working of his invention should be obtained, maintained, and encouraged.

Professor Elihu Thompson says: "Publish an invention freely, and it will almost surely die from lack of interest in its development. It will not be developed, and the world will not be benefited."

It is essential that sufficient inducement be offered to obtain that fostering care which provides the main difference in results between many a successful process and previous attempts to accomplish the same purpose by similar or even well nigh identical means. It is for this reason that so-called "anticipations" are pernicious. Disinterred from the dust and cobwebs of antiquity, unexplored except for the purpose of an action at law, they by-pass the main wealth and value of a patent—the toil, expense, skill, perseverance, and grit expended in its development. The anticipations were absolutely valueless from the lack of these adjuncts—ideas are cheap; it is work which develops fruitfulness.

I hope to live long enough to see infringers thus relying on a prehistoric anticipation, not merely treated with derision, but mulcted in a penalty for their failure successfully to employ, prior to the introduction of the contested invention which taught them the way, the anticipation they later bring forward as their defence in an action for infringement. Whence derived the infringers their valuable knowledge; from the patent or from the anticipations? The inventor to-day is unjustly treated: the world over, the patent law is unfair to him on this point. A better plan might be to deal with an invention as with a copyrighted book; reward the inventor for life with a small royalty from users; but the invention must first establish its novelty. Once established the State should uphold it.

Industry everywhere must be made to realise the cost in time, money, skill, enterprise, courage, and keenness that is required to develop successfully an epoch-making process, and I therefore intend this year to deal specially with what should be now a matter of history—viz., the forcing on the industry of the cyanide process. Many inaccurate statements appear from time to time in the writings of learned men who have obtained at second hand the history which is not within the scope of their own experience. I therefore published many years ago in the special twenty-first anniversary number of the *South African Mining Journal* an authoritative account from, and substantiated by, the official records. I am convinced that greater publicity should be given to that account.

Failure of Another Process Led to Experiments with Cyanide.

One has to go back to 1886 to appreciate the effort of the parties mainly responsible—Messrs. Wright, Verel, and Gow, of the Cassel Gold Extracting Co. In that year the company found itself faced with the sudden disappearance of inventor and secretary and the collapse of a process which could not be made to work. The board, undeterred by the flight of the inventor, determined to make the process work. It was found that instead of being a cheap method of gold extraction, it was in reality an expensive way of producing bleaching powder by the electrolysis of salt solution, to which lime was from time to time added. At the time J. S. MacArthur wrote an article to the technical Press showing how the process should be worked. The board therefore secured Mr. MacArthur's services, which resulted, however, in no improvement in results. MacArthur brought forward a little thing of his own, the extraction of gold from ore by solutions of ferric chloride. But this method proved to be not feasible in practice.

Still undeterred and anxious to press forward the process, the board next investigated MacArthur's suggested process of the use of solutions of cyanide of potassium. And now, with success apparently at hand, fresh difficulties and worries arose, to be overcome only by a display of such enthusiasm and bravery as but few men have shown under similar conditions, either before or since. The board had already dispatched an unsuccessful expedition, consisting of Messrs. Feldtmann and MacArthur, to the property of the St. John del Rey Co. to fulfil a contract entered into for the old process, and, undismayed by the lack of results, resolved on sending out a number of expeditions to introduce the cyanide process and to educate the mining community to an appreciation of its advantages. The first expedition (the Messrs. McIntyre) was sent to Queensland; the next to New Zealand (Mr. McConnell). From these two expeditions little that was tangible resulted. The Messrs. McIntyre demonstrated on concentrates and pyritic ores in iron pans, and Mr. McConnell erected a successful ore-treatment installation at Karangahake; but all this work attracted no users except for Dr. Scheidel's small concentrate plant at the Sylvia (1890).

(To be Continued.)

---

* Engineering and Mining Journal.

TRADE AND INDUSTRIES SECTION.

Week in the Mining Material and Engineering Trades.

BUSINESS VERY QUIET—IRON AND STEEL—AMERICAN NOTES—TIMBER AND BUILDING MATERIALS —UNION'S GRAIN ELEVATORS—OIL—ELECTRICAL GOODS—REDUCTION IN BRITISH RAILWAY RATES —JOHANNESBURG TOWN COUNCIL—TENDERS FOR MATERIAL ACCEPTED AND RECOMMENDED.

General.

Business during the week under review has, as was predicted in our recent reports as likely to be the case, been exceptionally quiet and characterised by an abnormal absence of inquiries on the Commercial Exchange from the mines. The mercantile community is now, however, accustoming itself to the fact that, although things generally are shaping well, not much improvement can be looked for before we have turned another quarter of 1922, when, with the continued prosperity of the mines and the gradually increasing spending power of the community, the present dullness should give place to more cheerful and stable business conditions. The opinion expressed in commercial circles is universal that a great change for the better will be witnessed within three months, at the outside by the end of the year. The trouble is, of course, how to bridge the intervening period, during which many merchants, although assured of better times ahead, may be obliged, in the absence of financial facilities, to sacrifice their stocks below value in order to keep going. To say the least the present times are very trying from the standpoint of both merchant prince and humble employee, although everyone is aware that it is simply a matter of hanging on. The fact remains that even in Johannesburg's golden city ready money is to-day very scarce—scarcer perhaps than it ever has been in the annals of the Rand. The buoyancy of the community and its capacity to recover from knock-down blows were too readily accepted after the end of the labour struggle in March. Not nearly enough appreciation was paid to the absence of wages coming to the miners and to the dislocation of business conditions here—meaning about three months, during which financial conditions generally were at a standstill and we are now only becoming wise to the economic law governing such tremendous upheavals.

In a chat this week with one of our commercial captains, he said there was still a lot of grumbling at the poor buying of the mines during July, which purchases amounted to very little indeed. The reason for such general abstention was rather hard to follow, unless it were done with a view to showing large profits in the immediate future and providing good dividends at the end of the year with the ultimate view of drawing the worlds' attention to the Rand's potential future. He, however, considering the increasing monthly output of the Rand since the end of the strike, thought that the purchases of the mines had in no wise been commensurate with such increase. It was possible, of course, that they were depleting their old stocks (the end of which had been prophesied about this time last year) which would be all to the good of merchants, and rebound to them later on. But, in any case, he thought, we had now got to low water mark; the mines might be justified in reducing their purchases for some special purpose; it might be all right; and the country will probably get the benefit of it later on; but he said the country should get the full purchasing power for the amount of gold returned. It was, he added, a very bad time for merchants just now, who were feeling the pinch very acutely. Unfortunately, goods at the moment, owing to financial exigencies, were being sold at lower than value; certain firms in good repute, as sound as a bell, but unable to collect their dues from clients, were obliged to sacrifice in order to meet their commitments. The bank pressure, he said, which was generally expected would be relaxed after the end of the half year, had become if anything, even more stringent, and it was a time of extreme tension to many merchants, normally absolutely sound, as regards finances, to weather the present financial crisis. This was, of course, looking at facts as they should be looked at by every prudent merchant, but adopting a more cheerful mood as to the future, despite the present dullness, everything augurs well for good sound business conditions obtaining very shortly. The future of South Africa, he asseverated, is assured, more optimism prevails than ever, and before many months are over our heads he felt assured that commercial houses would have a return compensating them for past losses and disappointments. He was in short very optimistic as to future business conditions. Mining in the country is certainly looking better than for years, and the prospects for the future, in the shape of new development, had never been so bright. Should they materialise only to some slight degree, it will mean a tremendous thing to the Union.

An influential merchant interview this week said we had undoubtedly not got into swing yet, it seemed to him that we had got to wait for improvement in conditions as far as the mines were concerned; it would appear that the mines are waiting an opportune time. Their real object, he thought, was to make their output certain and leave development to the future, which really affects their requirements at present.

A big industrialist thought things were shaping better this month than last. Not much change in prices has to be recorded, if anything, iron and steel have just been a turn lower, and the new season's consignments of timber expected next month, may after arrival probably find prices ease off a little also.

The profits made by the gold mining industry last month are very satisfactory, and confirm the optimism of far-seeing commercial men in predicting a better time coming for the Rand community very shortly.

London is at the present moment naturally the cynosure of all eyes, and the result of the Allied Reparations Conference—upon which so much depends the solution and stabilisation of the world's trade—is awaited with keen interest.

Iron and Steel.

Business during the past week has been of an exceedingly quiet character, and Monday's holiday only accentuated the dulness of the market experienced of late. The Commercial Exchange, in the absence of buying orders from the mines, has been quite listless, and generally there is a lack of vim in business conditions. The undercurrent is, however, sound and prospects good and promising for about September-October. The bridging of the next three months is causing merchants, however, much anxiety.

Latest Local Quotations.—Dunswart iron, 18s. to 23s. per 100 lb. Union Steel Corporation, Limited, 19s. to 22s. 6d. Imported iron and steel, flats, rounds and squares, from 25s 6d to 35s; channels and joists, 25s. to 28s.; imported angles, 27s. to 31s. 6d.; tee iron, 27s. 6d.; shafting, $\frac{3}{8}$ in. down to 3-16 in., 7½d. to 9d.

"CAMEL HAIR" BELTING

NOTICE

TO BELTING MANUFACTURERS, DEALERS, AND PURCHASERS.

NOTICE IS HEREBY GIVEN that the term "Camel Hair" applied to Belting is the Trade Name and Registered Trade Mark of F. REDDAWAY & CO., LIMITED. All persons selling or offering for sale Belting as "Camel Hair Belting" which is not of the manufacture of Messrs. F. Reddaway & Co., Limited, will be prosecuted, and the public are warned against purchasing spurious Belting sold under this name or any imitation of the Trade Names or Trade Marks of F. Reddaway & Co., Limited. The "Camel Hair," "Camel" Brand, and "Camel" Belting, can be obtained only from Messrs. F. Reddaway & Co., Limited, or their Representatives.

All Communications to be addressed to:—

BARTLE & COMPANY, LTD.,
LOVEDAY HOUSE.
P.O. BOX 2466.   PHONE 3553.
JOHANNESBURG.

STANDARD BANK
OF SOUTH AFRICA,
LIMITED.
(With which is incorporated the African Banking Corporation, Ltd.)

Established 1862

Authorised Capital - - - -	£10,000,000
Subscribed Capital - - - -	£8,916,660
Paid-up Capital - - - - -	£2,229,165
Reserve Fund - - - - -	£2,893,335

GENERAL BANKING BUSINESS transacted at all Branches and Agencies; DEPOSIT and CURRENT ACCOUNTS opened; PURCHASE and SALE of INVESTMENT SECURITIES effected, etc.

SAVINGS BANK ACCOUNTS opened on terms, particulars of which may be obtained on application.

The BANK is in close touch with TRADE and INDUSTRIAL CONDITIONS, both local and overseas, and special attention is given to COMMERCIAL ENQUIRIES from customers.

EXECUTOR and TRUSTEE business undertaken.

Over 360 Branches and Agencies in Africa.

Agents and Correspondents throughout the world.

USE

"PORPOISE"

BRAND

ANTIFRICTION GREASE

Used for years by the majority of Mines all over South Africa.

Manufactured by

South African Lubricants & Chemical Works, Ltd.,
DURBAN & JOHANNESBURG.
Phone 1618, *Johannesburg Branch Office.*

lb.; ⅜ to 1½ in., 6½d.; 1¼ in. to 6 in., 4½d.; steel plates, 1/16, ⅛, 3/16, 18s. 9d. to 21s. 6d.; 10 x 5 and larger, 25s.; ¼ to ½, 23s. 6d.; spring steel, 7d. to 8½d. lb.; bolts and nuts, hexagon, ⅜, 7 5-16d. lb.; ½ in., ⅝ and ¾, 33s. 6d. to 47s. 6d. per 100 lb.; hexagon nuts, ⅜, 8½d.; ½ in., ⅝ and ¾, 7½d.; fish plate bolts and nuts, ⅜ in., 6d. lb.; ½ in, 4d. to 4¼d.; ⅝ in. and ¾ in., 3¼d.; dog spikes, 32s. 6d. per 100 lb.; rivets, ¼ in., 6 5-16d.; ⅜ in., 5d.; ½ in and ⅝ in., 37s. 6d. to 40s. per 100 lb.; ⅝ in., 50s.; brass rods, ¼ in., 1s. 3d.; ⅜ in., 1s. 6d.; ½ in., 1s.; hexagon brass rods, 1d. lb. extra; copper rods, ⅜ in., 1s. 9d.; ½ in., 1s. 10d.; ⅝ and upwards, 1s. 9d. lb.; tool steel, 2s. 11d. to 3s. 3d.; brass sheets, 1s. 10d. to 2s. lb.; copper sheets, ¼ in. to 18 gauge, 1s 10d. lb.; 20 gauge, 1s. 11d.; 22 gauge to 28 gauge, 2s. lb.; firebox copper, 2s. 1d. lb.; copper tubes, ¼ in., 3s.; ⅜ to ⅝ in., 2s. 4d.; ¾ to 4½ in., from 2s. to 2s. 2d. lb.; phosphor tin, 2s. 7d.; ingot tin (Lamb & Flag), 1s. 9d. lb.; ingot lead £28 per ton: drill steel, 5½d.; hollow, 7d. to 8d.; 1¼ in., 6½d. to 8d.; wire nails, 30s. to 35s.; shovels, 27s. 6d. to 46s. 6d. doz.; wheelbarrows, 40s.; picks, 35s. to 40s.; pick handles, 26s. to 30s.; hammer handles, 14 in., 4s. 10d. to 5s.; 18 in., 7s.; 24 in., 8s. 6d. to 10s. 6d.; 30 in., 15s. to 18s.; 36 in., 30s.; piping, ¾ in., black, 4¾d.; 1 in., 5¾d.; 2 in., 1s. 1d.; galvanised, ¾ in., 5d.; 1 in., 7¾d.; 2 in, 1s. 7d.; ¾ in. steam, 5¾d.; 1 in., 8d.; 2 in., 1s. 6d.; barbed wire, "Shorthorn," 69 lb., 13⅜ gauge, 19s. 6d. to 21s. per coil; plain galvanised fencing wires, No. 8 gauge, 100 lb. coils, 21s. 6d. per coil; No. 10 gauge, 100 lb. coils, 24s. 6d. per coil; No. 12 gauge, 100 lb. coils, 26s. 6d. per coil; bulb tee fencing standards, 14 lb., 19s. 6d. per dozen; 12 lb., 23s. 6d. per dozen; black baling wire, 14 gauge, 19s. per coil, 100 lb.; 12 gauge barbed wire, 22s. per coil, 96 lb.; plain wire, No. 8 galvanised, 21s. per coil, 100 lb.; fencing standards, 21s. for 12's and 24s. for 11's; droppers, 40s. per 100; screening, 3s. to 9s. 6d. per square yard; cyanide, 1s. 6d.; zinc shavings, 1s. per lb.

Engineering Shops.

Business in these at the moment is only middling; there is nothing big to report in regard to contracts.

Secondhand Machinery.

Inquiries are fair, but not much actual business is being put through just now. Dealers, however, are hopeful of better conditions ruling very shortly.

British Iron and Steel Prices.

Midland iron, about 84s. f.o.b.; Cleveland, f.o.b., 96s. 8d.; foundry iron, 95s. per ton; No. 3 Cleveland, G.M.B., 90s.; No. 4 foundry iron, 87s. 6d.; No. 4 forge, 85s.; mottled and white, 80s. per ton; medium steel billets, £8 5s.; hard ditto, £8 15s.; soft ditto, £7 15s.; common iron bars, £12; steel boiler plates, £13 10s.; steel ship, bridge and tank plates, £10; steel angles, £9 10s.; steel joists, £10; steel toes, £10 10s.; flats, 5 in. and upwards, £10; heavy steel rails, £9 10s.; fishplates, £14 10s.; iron and ship rivets, £16; black sheets, £13 15s.; galvanised corrugated sheets (24 in. gauge), £16.

American Notes.

Eight-hour Day in the Steel Industry.—The proposed abolition of the 12-hour day in the steel industry marks another stage of the movement in favour of a standard working period of eight hours. President Harding and Secretary of Labour Davis are both in favour of the reduction, and it is generally felt that the adoption of a nominal eight-hour day is good business for all concerned—employer, employee and last, but by no means least, for the nation.

Mexican Petroleum Production Highest on Record.—The average monthly exportation of oil from Mexico during the current year has been about 17,830,000 barrels. The monthly averages since 1918 have been steadily increasing approximately as follows: 4,490,000 barrels, 6,637,000 barrels, 12,816,000 barrels, 15,170,000 barrels, and 17,830,000 barrels, or a total to date of nearly 560,000,000 barrels. The President of the Mexican Petroleum Co., the largest producer, states that it is conservative to say that all their wells could provide at least 1,000,000 barrles of oil a day if run to capacity, and they are taking less because they have not the tank steamer facilities for moving so much oil.

The Standard Oil Company is active in Montana, through its subsidiaries, where considerable interests have been taken over and great activity displayed recently.

A survey undertaken by the geological staff in Australia of the Anglo-Persian Oil Co., Ltd., in a part of the main island of New Guinea, covering an area of 2,000 square miles, has reported that although small quantities of oil could probably be obtained in the immediate vicinity of the main seepages, such operations would, it was believed, not repay outlay and working costs. Generally, the report was unfavourable as to oil prospects. The Federal Government favours the proposal to make additional surveys, and in the meantime will maintain its policy of refusing to grant leases or licences for prospecting for oil in the mandated territory. New Guinea, it will be remembered, was formerly German territory, and is now held under mandate by the Commonwealth.

Ontario Iron Ore Possibilities.

The Ontario Department of Mines, having in view the encouragement of the iron ore industry of the province, has arranged for a conference of those interested, and representatives of the iron and steel companies, owners of iron ore deposits and metallurgists have been invited to attend the same. The conference will be asked to devise plans by which the iron ore deposits, which are composed largely of low-grade ore, can be made commercially available. This will necessarily involve operations on quite an extensive scale, entailing a large expenditure. One feature which will receive attention is the possibility of using electricity for smelting, in view of the large water powers capable of development.

The Iron Trade.

Pittsburg reports that there has been a further decrease in the turnover in the finished steel market, but mills assert that this is due chiefly to their unwillingness to commit themselves farther ahead. Considerable buying pressure for early deliveries is noted, and in the majority of lines delivery premiums, generally 2 or 3 dollars a ton, are being paid for early deliveries. This is particularly true of bars, shapes, plates and sheets. Bars, shapes, plates and sheets are 1.6c. to 1.70c., and black sheets 3.15c. to 3.30c. Steel ingot production continues at a rate of fully 39,000,000 gross tons a year, against a rate of 35,000,000 tons April 1, when the coal trade strike started, and production is slightly increasing.

Pig Iron.—The market remains stagnant. Prices are largely nominal at 25 dollars for Bessemer and basic and 24 to 25 dollars for foundry, fo.b. Valley furnaces.

Coke.— Furnace, 8 dollars; foundry, 8 to 8.50 dollars.

Metal Markets.

The demand for copper has improved somewhat. Lead is perceptibly easier. The zinc market has been exceptionally quiet. For tin there are practically no consumers. Copper sheets, New York base, 20.50c. per lb. wire, 15.75c. Lead sheets and zinc sheets unchanged.

1924 Mechanical and Engineering Exhibition.

The task of organising the shipbuilding, marine, mechanical and general engineering sections of this great exhibition is proceeding apace under the aegis of the British Engineers' Association, which is a guarantee that the exhibition will be representative of the best modern practice in British engineering.

Timber and Building Materials.

The timber business is quite fair, but stocks are getting very low, especially 3 x 9 deals, which are very scarce. Another month, however, should see merchants relieved of the present dearth. The buliding trade is also fairly good, with a number of new jobs coming out. Men generally, and plasterers in particular, are not too plentiful.

Timber Prices.—3 x 9 deals, up to 18 feet, 1s.; over 18 feet, 1s. 1d.; scantlings, 10½d.; beaver boards, 4d.; flooring, 6d. to 6½d.; ceilings, 4½d. to 4¾d.; Oregon, 5s. 6d.; white pine panels, 7s. 6d. to 8s.; corrugated [illegible] 7½d. to 8½d. Furniture timber: Burmah teak, [illegible] per cubic ft. nett; American oak, 1 in., 10½d.; 1½ in., 11d.; 2 in., 1s. 1d. nett; Japanese oak, 11½d. nett; West African mahogany, 1 in. to 4 in. thick, 25s. to 28s. per cubic ft. at coast; Rhodesian mahogany, 9s. per cubic foot at mills; Honduras mahogany, 35s. per cubic foot; American yellow pine, 1s. 4d. per foot at 1 x 12 size; American pine shelving, 10d. per ft.; 3-ply wood, 3 m.m. up to 5 m.m., alder and birch, 4d. to 6½d. per sq. ft.; oak and teak, 3-ply, 10d. per sq. ft. Prices per sq. ft., oak and teak, 3-ply, 10d. per sq. ft. Prices for bricks remain much about the same, viz.: Klompje bricks, 25s. per 100 at kilns; [illegible] bricks, £10 per 1,000 at works; mixed, 70s.; wire-cuts, £4 10s. to £5; and £5 for pressed per 1,000, at kilns; columns from 20s. to 30s., according to size; roofing tiles, Marseilles, £25 per 1,000 at the works; chimney pots, 12 in., 7s. 6d.; 15 in., 9s.; 18 in., 10s. 6d.; dry red oxide, 16s. per 100 lbs.; white lime, 7s.; blue plaster lime, 5s. 3d.; blue lime, 4s. 3d.; cement, 10s. 3d. a bag; damp course and roofing, 36s. to 54s. for 1 to 3-ply.

Secondhand Iron and Timber.

Business remains very quiet in the secondhand iron and timber lines, with very few inquiries going. Iron is quoted at 5d. to 6d.; timber at 7d. to 8d. Stocks are far from plentiful.

Durban Grain Elevator.

Contrary to reports made as to certain delays in the erection of the Durban grain elevator, it is said that the work thereon is proceeding satisfactorily and should be completed within the period originally specified. As a matter of fact, it is confidently expected that the chain of elevators will be ready to deal with next year's crop of grain.

Electrical Goods.

Business in this section, an important merchant this week said, was slack—little doing in town, not much coming to hand along the Reef, and country activity showing itself more in the shape of inquiries than orders. Still, inquiries indicate that trade is moving or about to move, and he was certain that from the various inquiries for materials received no long time would probably elapse before business resulting therefrom would ensue. Lamps are now 14s. to 15s. wholesale, 18s. retail. Stocks on hand in all lines are good and are constantly being replenished by new consignments. Prices are very firm overseas, and notwithstanding a few reductions presently occurring, future quotations are found to be higher, as the market both in Britain and on the Continent is firming.

Reduction in British Railway Rates.

A cut in charges for the conveyance of goods, amounting to 25 per cent., has been announced, accompanied by a reduction in the flat rate approximating 1s. per ton. A lower charge has also been indicated for small percels. Every class of merchandise benefits from the reduction, and the trading community of Great Britain will, it is stated, benefit to the extent of many millions by the all-round reduction of railway rates which came into effect on the 1st inst. The commercial community here would like to see a similar, or, at any rate, some, cut in Union railway rates to ameliorate existing conditions.

English Dockers' Strike Averted.

The National Transport Workers' Conference has assented to a reduction of wages of 2s. a day, bringing down the minimum to 10s. per day. Final terms have not yet been arranged, but it is believed that the 2s. reduction will be spread over several months.

Tenders Recently Accepted by Johannesburg Town Council.

Hume Pipe (S.A.), Ltd., for the supply of 1,250 yards 12 in. concrete pipes, at 18s. per yard, £1,125; 1,550 yards 15 in. concrete pipes, at £1 4s. a yard, £1,860; total, £2,985. Rhodesian Native Timber Concessions, for the supply of 1,000 Rhodesian teak sleepers, each 8 ft. 4 in. by 9 in. by 4½ in., at 16s. 6d. each, £825. The Griffin Engineering Co., for the supply of 500 tubes for Babcock and Wilcox marine type boilers, at £1 0s. 9¼d. each, £519 15s. 10d. Dunswart Iron and Steel Works, Ltd., for the supply, as required, of 20,000 lbs. of 1 in. by ½ in., and, approximately, 15,000 lbs. of ⅞ in. by ½ in. horse-shoe bar iron, at 17s. per 100 lbs., £297 10s.

Telegraph Manufacturing Co., Ltd., 7 miles ·04 sq. in. underwriters' wire, at £61 per mile, £427. United States Rubber Co., 3½ miles No. 6 S. W. G. underwriters' wire, at £44 per mile, £154. Griffin Engineering Co., 3½ miles No. 6 S. W. G. underwriters' wire, at £44 per mile, £154. Manchester Water Meter Co., for the supply of spare parts for Frost water meters, £245. Steel piping for circulating water system at Power Station: Messrs. Stewarts and Lloyds (S.A.), Ltd., 150 ft., at 24s. 10d. per foot for ¼ in. thick piping. Messrs. Geo. Kent, Ltd., for spares for Kent standard water meters, £1,876 14s. 2d.

Tenders Recently Submitted and Recommended by Johannesburg Town Council.

Messrs. Mossop and Sons, Rondebosch, C.P., for the supply of heavy harness leather, six months' contract, at 2s. 5½d. per lb. Messrs. Stewarts and Lloyds, Ltd., for ½ in. piping at 3·7d. per foot, 1 in., 6½d. per foot, £235 8s. 4d. Electric lamps and fittings: Messrs. Bartle and Co., Ltd., 5,000 210 volt. 60 watt lamps, 1,000 210 volt 20 watt lamps, 5,000 240 volt 60 watt lamps, at 7s.-7s. 6d. per doxen, £341 13s. 4d. Messrs. Hubert Davies and Co., Ltd., 1,000 210 volt 100 watt lamps, at 18s. per dozen, £300. British General Electric Co., 100 8½ in. Goliath lamp fittings, at 54s. each, £270; 100 8½ in. Bayonet lamp fittings, at 52s. 9d. each, £263 15s.; 100 6½ in. Bayonet lamp fittings at 33s. 6d., £167 10s. Messrs. Raleigh and Rockey, for the supply of disinfectant of a guaranteed carbolic acid co-efficient of 18 to 20 per cent., at 5s. 4d. per Imp. gallon.

Coal purchased during the strike, amounting to £4,367 8s. 3d., was recommended for payment. Messrs. C. Kleudgen and Co., Ltd., spares for the 36 traction motors ordered from them, £756 14s.

Electricity Bill.

The expenses incurred by the deputation to Capetown, which did such good work recently, has been passed by the Town Council, amounting to £363 16s. 6d.

Water Supply, Brixton Reservoir.

The Town Council has sanctioned the payment of £3,554 16s. for the purchase of the Rand Water Board's right, title and interest in the land, reservoir and elevated tank at Brixton.

The British South Africa Company invite tenders per 30th September for the purchase of the right to cut timber on certain areas situated along the south bank of the Gwaai, in the Pankie district.

Australian Railways.

The Commonwealth, it is reported, has agreed to the construction of a railway from Port Augusta to Hay, which will provide a complete uniform gauge from Western Australia to Queensland.

Wireless in the Union.

Mr. L. D. Hill, a Marconi wireless expert engineer, has arrived from England to start very important research work in connection with the proposed wireless station to be erected in the Union. Mr. Hill appears to favour the Cape Flats as the most promising site for the proposed installation.

Union's New Port.

It is announced from Mbabane that the railway engineers' survey expedition has commenced the survey of a line from a point in Swaziland at which the original survey was carried out for a railway to the railhead in Portuguese territory. An easy route has been found along the Usutu River, through Buluurn Mountains, and a route is now being surveyed in the direction of the Lubombo Mountains, with Kosi or Sordwana Bay as its objective.

Speeding Up of Cable Communications.

Greatly improved cable facilities between England and South Africa are promised next year. Cable delays have, of course, been caused by conditions resulting from the World War, but the Eastern Telegraph Company, since the declaration of peace, has been working steadily to restore efficiency. New cables are now being laid down, which will relieve the present congestion and put the cable service in a position superior to that before the War.

Export Credit Scheme.

The British Government has decided to continue the export credit scheme for another year.

Financial.

The total sales for the Union of Union loan certificates to June 30, 1922, calculated in £1 units, totalled 3,651,999. The totals for the various Provinces are as follows:—Cape and Free State, 2,1118,575; Transvaal, 964,937; Natal, 550,005; South-West Province, 18,482.

S.A. Reserve Bank.

The statement of the Bank on August 5 showed ratio of cash reserves to liabilities to the public at 79.1 per cent.

Dutch South Africa Line.

The balance-sheet of the Dutch South Africa Line shows a loss for the past year of about £1,800.

LEEUWPOORT (AFRICAN FARMS) TIN MINES, LTD.

During the quarter 4,654 tons of ore were milled, resulting in the recovery of 40 tons of concentrates of an average grade of 59·77 per cent.

£1,000,000,000.

In commemoration of the production in the Union of South Africa of minerals to the aggregate value of One thousand million pounds sterling,

The South African Mining and Engineering Journal

HAVE NOW IN PREPARATION A

SPECIAL YEAR BOOK

FOR 1922-23.

Which will be a complete illustrated work of reference, containing all facts and figures relating to the South African Mining Industry, its technology and trade, and including valuable maps, diagrams, mine plans and statistical annexures, compiled by experts.

In 20 parts complete in one large and handsomely produced volume.

PRICE 10/6. POSTAGE 1/6 EXTRA.

Order early from the Publishers:
S.A. MINING & ENGINEERING JOURNAL,
176-180, Stock Exchange Building,
Telephone 913. P.O. Box 963.
JOHANNESBURG.

DIVIDEND PAYMENTS.

Name of Company.	Amt.	Books closed.	Payment.
†Apex Mines	-/6	July 1—July 8	Aug. 17
†Bell's Transvaal	1/-	April 29	July 14
†City Deep ..	1/6	July 1—July 7	Aug. 4
†Cons. Co. Bultfontein Mine	7½%‡	July 1—July 7	July
†Crown Mines	-/6	July 1—July 7	Aug. 4
†Geduld ..	1/3	July 1—July 14	Aug.
†Government Gold	1/-	July 1—July 10	Aug.
†Griqualand West	4%‡	July 1—July 7	July
*Johannesburg Cons'd. ..	7½%‡	July 1—July 10	Sept.
†Johannesburg Estate ..	2½%‡	June 17—July 3	Sept. 1
†Lonely Reef	15%‡	May 29—June 3	July 14
†Meyer & Charlton	10/-	July 1—July 8	Aug. 10
†Modderfontein B Gold ..	1/6	Aug. 1—Aug. 7	Sept. 5
†Modderfontein Deep ..	2/6	July 1—July 14	Aug.
†Natal Navigation Collieries	1/-	—	—
†New Modderfontein	2/-	Aug, 1—Aug, 7	Sept, 5
†Nourse Mines	-/6	July 1—July 7	Aug, 4
†Rand Mines	1/-	July 1—July 7	Aug. 11
†Rhodesia Copper	10%§	June 20—June 29	June 29
†Rose Deep	1/-	July 1—July 7	Aug. 4
†Shamva	1/6	June 21—June 24	July 13
†S. African Gold Trust (pf.) ..	6%§	June 1—June 14	July 1
†Town Prop. of Bulawayo .	5%§	-	
†Van Ryn Deep .	2/-	July 1—July 10	Aug.
*Van Ryn Gold	1/-	July 1—July 8	July 25
†Victoria Falls (ord.)	5%§	June 30	July 7
†Victoria Falls (pref.) ..	7%§	June 30	July 7
†Witwatersrand Gold	1/-	July 1—July 10	Aug.

* Tax Free. † Less Income Tax. ‡ Actual.
§Per annum.

KATANGA COPPER DEVELOPMENTS.

Recent copper discoveries by the Union Miniere have demonstrated that the Katanga contains the greatest copper field in the world, and the position is greatly improved by the discoveries made by boring at the Ruashi Mine, near the Star Mine, during the past six months. Over 1,000,000 tons of high-grade smelting ore have been located already in Ruashi, and this has changed the outlook for the better, and will probably cause a readjustment of the metallurgical programme.

Treatment of Copper.

Probably more reverberatory furnaces will be installed at the Lubumbashi smelter. The erection of a big leaching plant at Panda has been postponed on account of the cost, but ultimately an immense leaching plant, driven by electric power on the Lufira and Lualaba rivers, will be installed at a cost of 500,000,000 million francs for the treatment of low-grade ores. The crushing and concentrating plant already erected at Panda has a capacity of 4,000 tons per day, and is the biggest individual ore plant in Africa.

The Panda plant is at present working at a little over one-third its capacity. The Union Miniere's output for June was 1,600 tons of copper, and the company has under consideration plans which will increase the output gradually up to over 100,000 tons of copper annually, and may even result eventually in its reaching 230,000.

More Mineral Discoveries.

Sulphide ore has been encountered in the Luishia Mine in depth, and immense tonnages are available in the Kambove and other mines. The tinfields are looking well, and immensely valuable tonnages of cobalt and radio-active uranium ores have been located. Coal has been located at Sankishia, and important experiments are in process with pulverised coal at Lubumbashi.

The Katanga copper ores are so rich and cheap-mining that even with the metal at its present low price the works can keep going and can undersell all other copper mines in the world, despite the excessive freight charges.

4810 AIR HOSE

FOR many, many years Air Hose was sold in South Africa on a basis of price alone. Air Hose was simply Air Hose.

Immediately one manufacturer cheapened his product and cheapened his price he secured the bulk of the orders.

Then another manufacturer went a step further and made his price and quality still lower, and HE got the orders.

For some time we followed the accepted scheme of buying Air Hose.

AND THEN WE WOKE UP

Instead of selling a service, we were simply cheapening a product.

But in those days no Air Hose was branded, every maker was too ashamed of his product to put his brand on it.

So we just asked our factory to make the best and very finest Air Hose it is possible to make—**And the result is—**

4810 Air Hose

They have followed Motor Tyre practice in making an Air Hose which we proudly brand as ours, and, further, every length of Hose is branded with a serial number, so that close and accurate record may be kept of its performance.

4810 Air Hose costs more per foot, but less per shift, and gives greater drilling efficiency than any other Air Hose on the market.

United States Rubber

CO. (S.A.) LTD.

CAPETOWN JOHANNESBURG

DURBAN

SWAZILAND TIN, LIMITED.

(Incorporated in the Transvaal).

Notice to Shareholders.

NOTICE IS HEREBY GIVEN that the Seventeenth Ordinary General Meeting of Shareholders for the year ended 30th June, 1922, will be held in the Board Room, The Corner House, Johannesburg, on Wednesday, 20th September, 1922, at noon, for the following business :—

1.—To receive and consider the Balance Sheet and Accounts for the year ended 30th June, 1922, and the Reports of the Directors and Auditors.

2.—To confirm the appointment of Messrs. F. R. Phillips, M.C., and W. H. A. Lawrence, as Directors of the Company, in place of Messrs. J. R. Leisk, C.M.G., and A. J. Wright, resigned.

3.—To elect Directors in the place of those retiring in accordance with the provisions of the Company's Articles of Association.

4.—To determine the remuneration of the Auditors for the past audit, and to appoint Auditors for the ensuing year.

5.—To transact any other business which may be transacted at an Ordinary General Meeting or which is brought under consideration by the report of the Directors.

The Share Transfer Books of the Company will be closed from the 14th September to 20th September, 1922, both days inclusive.

By Order of the Board,

TRANSVAAL CONSOLIDATED LAND AND EXPLORATION CO., LTD.,
Secretaries.
per C. L. READ,

Head Office,
The Corner House, Johannesburg.
26th July, 1922.

NOW IN PREPARATION.

Special £1,000,000,000 Number

"S.A. Mining & Engineering Journal"
Year Book for 1922-23.

In 20 parts complete, in one large and handsomely produced volume.

PRICE 10/6.   POSTAGE 1/6 EXTRA.

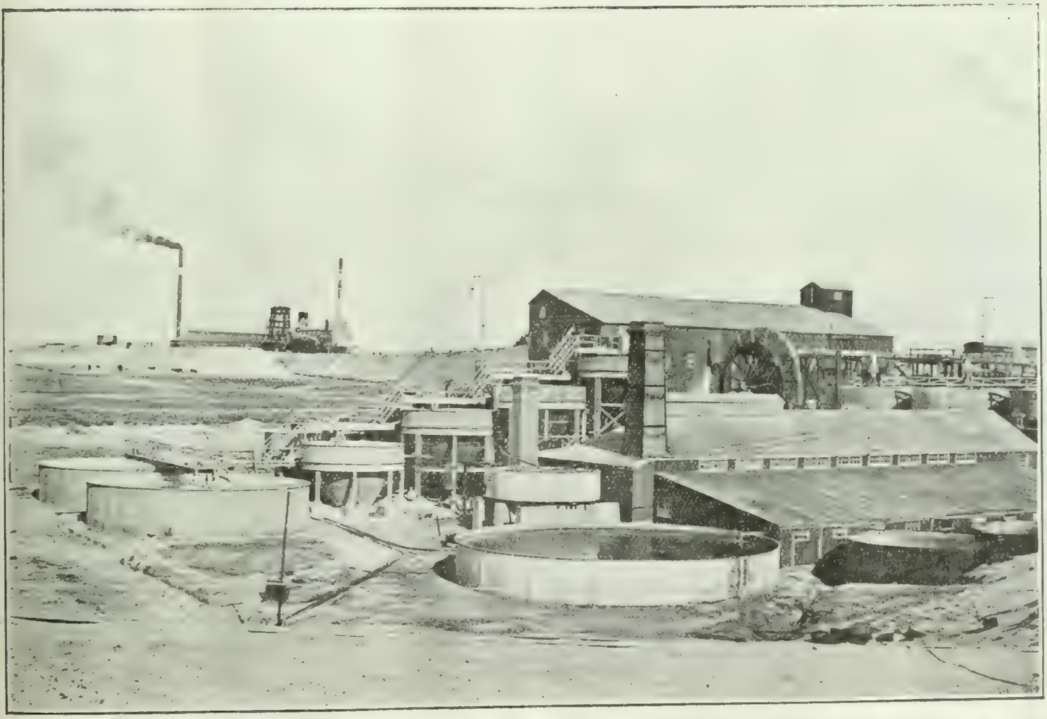
Order your copy now from the Publishers, 176 to 180, Stock Exchange Buildings. P.O. Box 963. Telephone 913. Johannesburg.

Crown Diamonds New Issue—Heidelberg Geology—Central Rand Mines Progress—Dormant Mines—No. 1, the Van Dyk.

The South African
Mining & Engineering Journal
THE ONLY MINING AND ENGINEERING WEEKLY PUBLISHED IN AFRICA.
Established 1891.

Vol. XXXIII., Part I. JOHANNESBURG, TRANSVAAL, SATURDAY, AUGUST 19, 1922 No. 1612.

The West Rand Revival: General View of Aurora West.



With the general revival of interest in the West Rand, the Aurora West, with its neighbours, the Durban Roodepoort Deep and the Consolidated Main Reef, has again come into prominence. The above picture shows the splendid reduction plant at the mine, designed by the Denny Brothers. When erected, the plant was regarded as ahead of the times, but, in the light of present-day metallurgical progress, it redounds greatly to the credit of its designers.

SIEMENS BROTHERS

& CO., LIMITED

MANUFACTURERS OF

CABLES

AND

WIRES.

OVERHEAD LINE MATERIAL

AND

EQUIPMENT.

TELEGRAPHS

AND

TELEPHONES.

MANUAL AND AUTOMATIC.

SIGNALLING APPARATUS,

FOR

RAILWAYS, MINES, SHIPS AND POWER STATIONS.

JOINT BOXES

TAPES, COMPOUNDS, CABLE ACCESSORIES, TOOLS, Etc.

PRIMARY BATTERIES

FLUID AND DRY.

Carbons for Battery Making.

Representatives in South Africa:

A. J. G. SIMPSON, A.M.I.E.E.
African Life Buildings, 85, St. George's St.,
CAPE TOWN.
P.O. Box 239, Cape Town. Telephone 1202 Central.

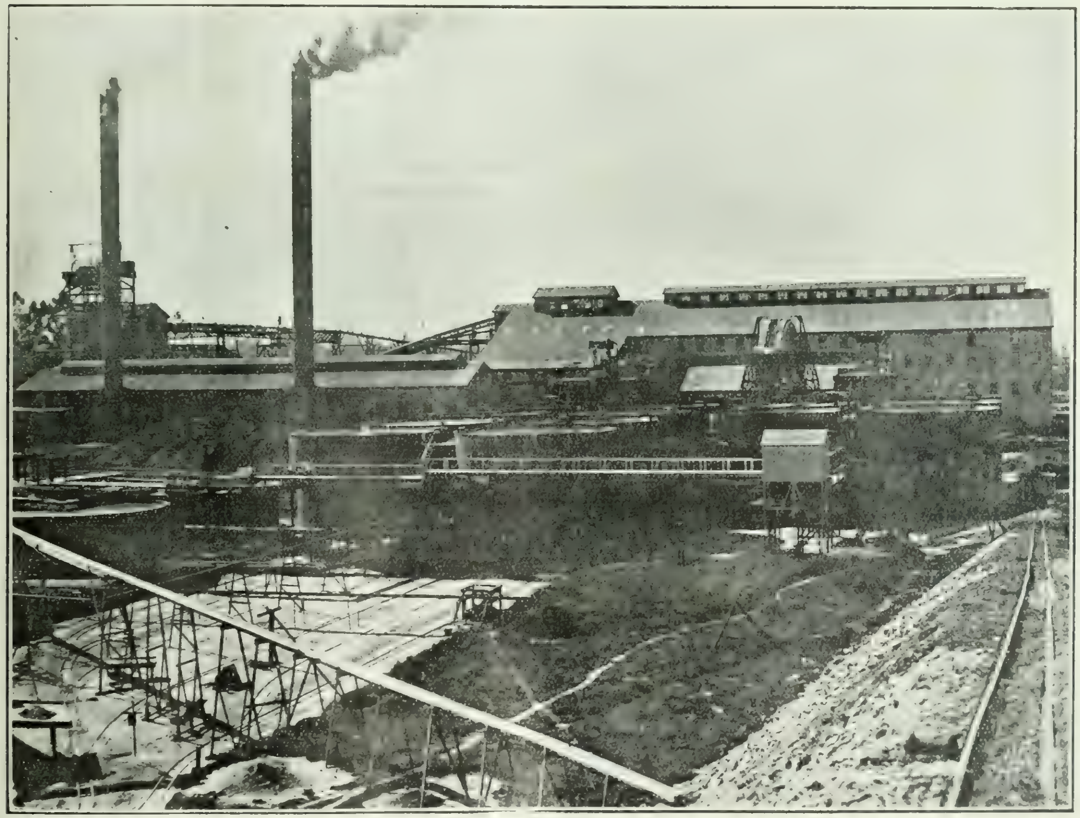
G. H. B. BERNARD, A.M.I.E.E.
9-10, Cotts Buildings, Rissik and Fox Sts.,
JOHANNESBURG.
P. O. Box 7404, Johannesburg. Telephone 408 Central.

Telegrams : "SIEMENS."

Improving Prospects of the Central Rand.

HOW BETTER CONDITIONS AND LOWER COSTS AFFECT THE CROWN MINES, ROBINSON DEEP, VILLAGE DEEP AND CITY DEEP—OUR ROBINSON DEEP FORECASTS FULFILLED.

The effect of increased efficiency, lower working costs and better conditions generally is nowhere more manifest than on the great mines of the Central Rand. At the Crown Mines, the City Deep, Robinson Deep and Village Deep the altered conditions have already been reflected in all round improved returns, and the current half-year promises, if present promise is fulfilled, to put a different complexion on the affairs of those producers. The change in the outlook for the Robinson Deep has, of course, been dramatic, and since we drew attention to the prospects of this concern in June last, when it seemed to be forgotten and ignored, it has jumped into prominence as one of the favourite speculative counters of the Central Rand. Whether the mine will justify all the high hopes now being expressed remains to be seen. That it certainly was undervalued two months ago in the light of the possible reduction in costs and the good developments in the lower levels is now generally admitted, and we can take to ourselves the unction of having told them so. The July profit of £30,084 from a tonnage crushed of 68,400 against £15,156 from a tonnage of 60,700 certainly points to the fact that richer ore was put through, though the official explanation is simply "higher tonnage crushed." In view of the increase in profits earned, which can doubtless be maintained, the prospect of arranging to meet the debt of £300,000 due at the end of the year is greatly improved.



Village Deep: A Central Rand Mine, now with much better prospects.

Crown Mines.

This great low-grade mine made a substantial reduction in costs in July, the saving being no less than nearly 3s. per ton. The large tonnage crushed makes this saving one of prime importance and greatly improved the profit earned, as the following table shows.

Month.	Tons.	Revenue.	Cost.	Profit.
March qr.	146,600	£246,312		£89,663*
April ...	146,400	197,041	22 1	35,662
May ...	161,000	223,271	22 2	44,672
June	172,000	240,709	23 0	42,768
July ...	214,000	282,356	20 0 7	67,690

*Loss.

City Deep.

The City Deep reduced its costs by no less than 2s. 2d. per ton in July, and the result is reflected in the splendid increase in the profits. The following table shows the recent history of progress at this mine:

Month.	Tons.	Revenue.	Cost.	Profit.
March quarter	55,600	£149,489	—	£33,469*
April	69,200	121,986	26 7	30,025
May ...	84,000	157,845	25 6	50,831
June	86,000	165,676	26 6	51,850
July ...	88,500	173,639	24/2	66,712

*Loss.

Village Deep.

The Village Deep had a very difficult time towards the close of last year, and the mine had a very vital interest in the campaign to reduce costs. The future of this mine is still bound up in the possibility of further reducing costs, and the following brief table shows at a glance its position in recent months:

Month.	Tons.	Revenue.	Cost	Profit.
March quarter	43,150	£62,946	—	£53,988
April	43,900	61,108	23 10	12,588
May	[illegible]	74,226	24 5	10,982
June	54,100	75,470	23 3	12,505
July	54,600	79,721	23 8.5	15,001

(Loss.

The month of July is, of course, but the first of the current half-year, and we have a long way to go before we can attempt to estimate the results for this six months, on which so much depends. But it is most satisfactory to note that the half-year has begun so well on the Central Rand, and that if the promise of July be justified, as we believe it will, the whole outlook for this important section of the Rand will undergo a change for the better.

Mr. H. W. Pursglove, M.I.M.E., has been appointed General Manager of the Transvaal and Natal Collieries.

The Robinson Deep, which has lately shown a marked improvement.

The Standard Bank.

The affairs of our two great banks are of such vital interest to the whole business community and bulk so largely even in the world of mining that the progress shown in the latest report of the Standard Bank calls for comment here. As the cables have already advised, the bank has declared in respect of its financial year ended March 31 last a final dividend and bonus making the total distribution equal to 16½ per cent., a rate now maintained for four successive accounting periods. The report submitted at the recent meeting shows the year's net profits to have exceeded half-a-million. The Standard Bank could not fail to be affected by the unfavourable conditions in business generally, and in the accompanying table the marked contractions during the twelve months covered will be noted alike in the balance-sheet totals and in the individual items of deposits, bills for collection and acceptances, and discounts and advances. Notes in circulation declined from £4,460,700 to £4,207,800 between September and March, and will, of course, continue to do so now that the Central Reserve Bank has the monopoly of note issue. As measured by the three cash items which head the list of assets, the liquidity of the position, indicated by the ratio to deposits, has improved from about 21¾ to 28 per cent.

	1922 March 31	1921. Sept. 30	1921. March 31.
Liabilities.	£	£	£
Paid-up Capital	2,229,165	2,229,165	2,229,165
Reserve Fund	2,893,335	2,893,335	2,893,335
Notes in Circulation ...	4,207,800	4,460,700	4,609,342
Deposit, Current and other Accounts ...	52,018,941	54,348,545	57,285,172
Acceptances, etc.	1,034,029	1,146,528	1,360,333
Bills for Collection ...	7,763,111	8,487,608	9,081,548
Profit Balance	502,996	—	454,407
Total	70,649,377	73,565,881	77,913,302
Assets.			
Cash in Hand and with Bankers	10,299,625	10,046,074	9,047,383
Money at Call and Short Notice	2,947,286	2,515,000	1,283,000
Cash in Transit	1,512,611	1,637,714	2,142,960
Investments	5,110,110	5,110,181	5,266,252
Bills Bought	5,551,085	5,569,823	7,968,947
Discounts & Advances	36,442,485	39,188,686	42,191,093
Bills for Collection ...	7,763,111	8,487,608	9,081,548
Premises, etc.	1,023,064	1,010,795	932,119
Total	70,649,377	73,565,881	77,913,302

The Dormant Mines of the Rand: I—The Van Dyk

A FAR EAST MINE WITH 18,000 FEET DRIVEN ON REEF—HIGH VALUES IN LOWEST LEVELS AND IN BOREHOLES—A UNION CORPORATION SUBSIDIARY WITH A FUTURE.

"Of all ways whereby great wealth is acquired by good and honest means, none is more advantageous than mining; for although from fields that are well tilled we derive rich yields, yet we obtain richer products from mines; in fact, one mine is often much more beneficial to us than many fields."—Georgius Agricola, 1550. (From Hoover's Translation.)

In a series of articles, of which this is the first, we propose to examine each week the position and prospects of the dormant mines of the Rand in the light of the more economical working conditions now in sight, and the improved facilities for raising the necessary capital. The Van Dyk is a particularly good example of a property which is bound in the near future, under the better conditions, to come into its own.

Among the dormant mines of the Far East Rand which are awaiting the revivifying effect of fresh capital, the Van Dyk Proprietary holds an important place. In the statement submitted by the Chamber of Mines to the Mining Industry Board it is specified under Class III. as one of the properties which stood to benefit directly from a reduction of working costs and increased efficiency. Class III., it may be noted, was described by the Chamber as including "those mines which have sunk shafts to the Reef, and carried out a considerable amount of development and which have exhausted their cash resources." The results obtained under the conditions prevailing have not been sufficiently attractive to warrant raising further funds, but the Chamber declared that an improvement in conditions—such as is now evident—would no doubt create further interest in these concerns, so that they may "reopen, continue development, and become future producers and employers." A glance at the history of the Van Dyk will enable us to gauge the prospects of the mine under the more favourable conditions now in sight.

A Glance at the History of the Mine.

The company belongs to the prosperous and successful Goerz or Union Corporation group, which also controls the Modder Deep and Geduld. It was registered in 1904, and has an issued capital of £500,000 in £1 shares fully paid. It owns the freehold of the farm Witpoort No. 162, Eastern Rand, including a mining area equal to 972 claims, whereon are two shafts. Boreholes put down preparatory to sinking the shafts gave encouraging results, the No. 5 giving 17 dwt. over 31 inches and the No. 3 went 40 dwt. over 35 inches. The No. 1 shaft struck the reef at 1,550 feet, and was continued down to 3,486 on the reef. The Consulting Engineer's report for the last year of the mine's working showed that up to the time in 1910 when operations were suspended owing to the exhaustion of working capital a total of 24,352 feet of development work other than shaft sinking, consisting mostly of driving, had been done to that date, covering a length on the dip from the northern boundary of 3,350 feet. Of that footage 18,039 ft. was on reef and sampled, the average value of the total being 5·63 dwt. over 30 inches. On the ninth or lowest level, a stretch was encountered averaging 7·2 dwt. over 30 inches for a length along the drive of 555 feet. A raise started in the centre of this payable stretch was put up 330 feet, averaging for that distance 6 dwt. over 30 inches. It is significant that the highest assays were obtained in the lowest levels. A stretch of 860 feet gave 8·91 dwt. over 30 inches in the seventh level and 555 feet in the ninth level gave 7·2 dwt over 30 inches. The No. 2 shaft was stopped at 1,057 feet, but the Consulting Engineer stated at the time of closing down that the mine could be unwatered within a month and work resumed quickly at any time it was desirable to do so. When work was suspended in 1910 the money market was unfavourable, and never in the intervening period have the governing conditions been so favourable for a resumption as to-day. When announcing their decision to suspend work the directors stated: "The Board are decidedly of opinion that conditions generally will so improve in due course as to make it possible to liquidate the debt of the company and at the same time provide new working capital on terms much more favourable than those which could be obtained at present." That prediction of the directors, it may be hoped, will at no distant date be fulfilled. The company owes the Union Corporation £100,050, which means that it has expended upon the purchase of its property, shaft sinking and development work a sum of £600,000, or over 24s. per share. In passing, it may be noted that the present market value of the property is only £50,000, or one-twelfth of what has been expended upon it to date.

Some Official Estimates.

Before operations were suspended several speeches made by the chairman of the company reflected the confidence of the then directors in its future. Thus at the annual meeting in March, 1910, a few months before the mine closed down, the Chairman, *inter alia*, said: "During the twelve months under review the satisfactory distance of 1,396 feet was sunk, making the total depth 2,610 feet. Apart from this, 6,864 feet of development work was accomplished, of which 6,035 feet were on the reef and gave an average assay value of 4·8 dwt. over a milling width of 30 inches. The footage attained both in the main incline shaft and in all the development faces was again very good—in the former the average monthly rate was as much as 155 feet, and in each of the latter it was 188 feet. It is encouraging to note that the seventh and at present the deepest level driven has given considerably better results than the average assay value obtained in all the other headings during the year, in so far as 860 feet averaged 8·91 dwt. over a width of 30 inches. The total linear development, apart from shaft sinking, carried out on your property since the commencement of operations amounts to 14,424 feet, which gives an average assay value of 6·09 dwt. over 30 inches. In view of the fact, however, that the gold contents of the ore are somewhat irregularly distributed in your property, your consulting engineer is not yet prepared to make a definite statement as to the tonnage of payable reef matter opened up by such development work. He therefore recommends that the work of further opening up the property should be vigorously proceeded with before the question of the erection of a reduction plant, as well as the capacity thereof, is dealt with."

Development Explained.

Again, at a meeting of the company in September, the Chairman gave the following lucid explanation of the development policy. He said: "The essential features of the first quarter's operations were that out of a lineal development of 2,390 feet on the reef 1,440 feet gave an average only some of 7½ dwt. over 30 inches, while during the second quarter out of 1,765 feet of total development 405 feet averaged 7½ dwt. over the same width, the values giving results which under the present conditions must be considered unpayable. These results are, of course, a good deal poorer than the average obtained previously, but I would remind you that they refer to two levels only, namely, the fourth and fifth, which have been driven at a distance from each other on the plane of the reef of 400 feet. On the advice of the company's consulting engineer, it was, under these circumstances, decided already at the end of March last to push on the work of sinking the main incline shaft with all possible speed in order to tap and develop the reef again at a distance of about 800 feet below the fifth level. The development work which was effected during the months of July and August on the fourth and fifth levels has given rather indifferent assay values, but I am glad to say that the policy of proving the reef at a greater depth appears to be already justified as far as the results obtained go, since the short distance driven to date on the seventh level exposes very satisfactory values. The actual figures are as follows: 80 feet driven on the level show an average assay value of 11.6 dwt. over 30 inches. It is certainly to be regretted that the fourth and fifth levels have not given better results, but I would like to submit the following figures for your consideration in order to illustrate that the influence of such result on the value of your whole property is, after all, of only comparatively small importance. I have mentioned already that the distance between the fourth and fifth levels on the plane of the reef amounts to 400 feet. The total distance from the northern boundary to the fifth level is 2,200 feet, likewise on the plane of the reef, and the corresponding distance from this level to the No. 2 shaft is 3,400 feet, while from the No. 2 shaft to the southern or dip boundary of the property it is 5,200 feet. It will be seen from these figures that the total length of reef running through your property is as much as 10,800 feet measured on the dip. It will be clear to you, therefore, that, in order to obtain a reliable idea about the value of your company's mining area, a policy of considerably more vigorous development is imperative. Such a policy has indeed already been initiated by your Board in opening up the seventh level, while the continuation of the work in sinking the main incline shaft to still deeper regions will be taken in hand as soon as the faces of the drives on this level are sufficiently advanced as not to interfere with operations in the shaft, and *vice versa*. At the same time, however, it is obviously very essential that further points of attack are opened up, and this naturally can only be done by resuming sinking operations in No. 2 shaft, which, as you will remember, was stopped in 1906 at a depth of 1,057 feet. This shaft is expected to cut the reef at a depth of about 2,800 feet, and when this has been effected it will be possible to open up the ore body at this point in all four directions, namely, by raising the main incline shaft, which is to be connected with the one at present being sunk from No. 1 shaft, by sinking the main incline shaft in a southerly direction, and by driving on the reef east and west.

Work on Larger Scale.

"Apart from serving the purpose mentioned already, this policy will enable your company to open up within a given period a much larger tonnage of ore than would be possible if development should be restricted to the ground tributary to the one shaft only, or, in other words, it will enable your company to consider later the question of starting milling operations on a much larger scale than would be possible under different conditions."

The conclusion to be plainly drawn from all these official statements and forecasts is that the Van Dyk, given a fresh start, under the more favourable economic and working conditions now in sight, has in it the possible makings of another great Far East Rand gold producer.

New Alluvial Diggings.

KAREEFONTEIN PROSPECTS.

Kareefontein, adjoining the Bloemhof commonage, has been proclaimed this week, and a big rush has occurred. The area of ground turned over on the Bloemhof commonage is twice as large as that turned over on any other digging in these parts, and the "Old Vaalbosch," which adjoins Kareefontein, has been worked right up to the boundary fence.

New Vaal River Workings.

Recently it was rumoured that Kareefontein was to be prospected, and diggers soon learnt that a well-known prospector had struck it rich. The place has now been proved beyond question, and the Mining Commissioner, exercising his prerogative, stepped in and stopped prospecting. The discoverer's claims were awarded to the discoverer, and from these claims up to date further diamonds to the approximate value of £1,700 have been taken out.

Transvaal Silvers.

Reduction Plant: The Latest General View.

ANSWERS TO CORRESPONDENTS.

"L. E." (Durban).—The syndicate has dropped out of sight, and is, we believe, in liquidation.

"Pioneer" (Shamva).—Cannot recommend them. See our article on the dormant mines of the Rand.

"Anxious" (Queenstown).—The cable in question was wrongly quoted in the London papers. It referred to another company with a rather similar name. The mine, however, is shaping well.

Crown Diamonds' New Era of Activity.

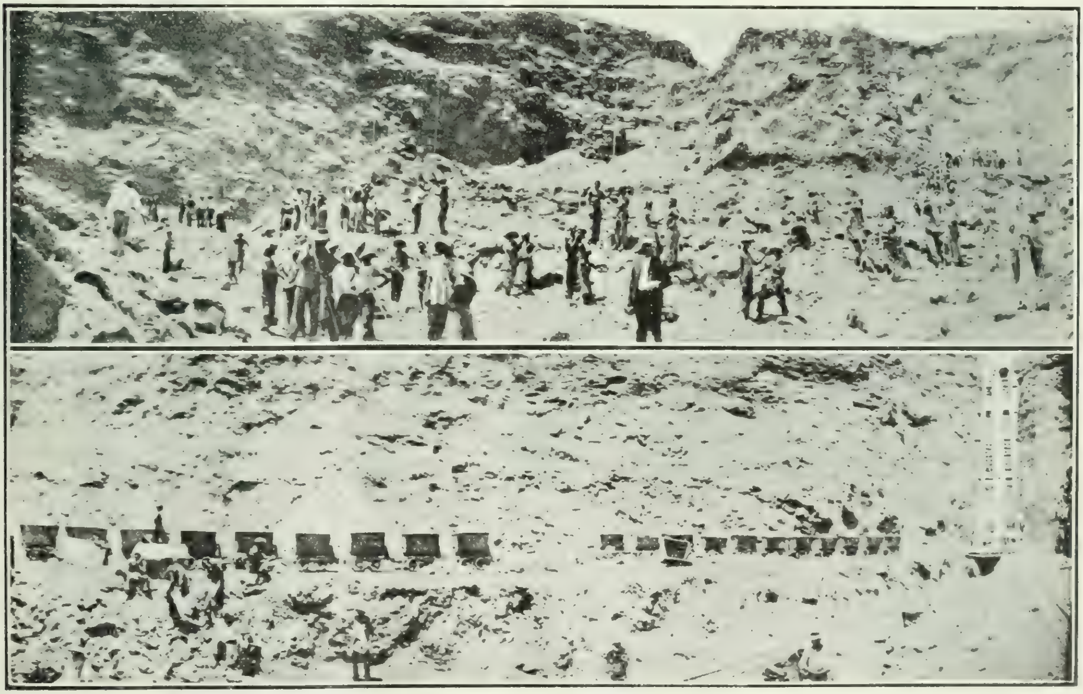
GREATLY IMPROVED PROSPECTS—IMPORTANT DEVELOPMENTS—ISSUE OF NEW SHARES WITH OPTIONS—PLANT TO BE RECONSTRUCTED AND EXTENDED—NEW ISSUE UNDERWRITTEN.

Encouraged by the greatly improved prospects of the mine, the directors of the Crown Diamond Mining and Exploration Company, Ltd., have decided upon a comprehensive programme of development and expansion. The plant is to be reconstructed to deal with 50,000 loads of blue ground per month, at a much reduced cost per load; exploratory work is to be vigorously pursued; and the capital increased to provide additional funds. The whole of the new issue now offered to the public on very attractive terms is underwritten.

The expected offer of shares by the Crown Diamond Company is announced this week. The public is invited to subscribe for 200,000 shares of 5s. each, forming portion of the increase of capital recently decided upon. The whole of the issue has been underwritten, and the applications of present shareholders will have preference in allotment. Subscribers to whom allotments are made will receive an option for a period of one year to take up further shares in the company at the price of 7s. 6d. per share in the proportion of five shares for every ten shares allotted. Further details of the offer will be found set out in our advertising columns, and it should be noted that the list closes on September 6.

The New Programme.

The new issue is made for the purpose of providing capital to carry out the recommendations of the company's consulting engineer, Mr. C. B. Kingston, by undertaking further exploratory work and reconstructing the plant to enable it to treat 50,000 loads of blue ground per month at a cost which it is estimated will not exceed 2s. 6d. per load of ground treated. This work has already been commenced. Mr. Kingston's report on the mine, dated May 11th, has been published. A supplementary report from him dated August 1st, bringing the information up to that date, has also been issued, and we make extracts from it below. These reports give the results of the recent development work, particularly in the newly explored area of the mine, and details of the yields from the various test washings. It is in consequence of the very satisfactory results disclosed that the directors have decided to adopt the consulting engineer's recommendations and vigorously to prosecute the exploratory work and reconstruct the plant for the increased production. It is noteworthy that the company is exempt from the Diamond Law which provides for the payment of 40 per cent. of profits to the Government, so that all profits made will be available for distribution to shareholders. The company, it should also be noted, owns the freehold of the farms Driekop and Rugby in the district of Kroonstad amounting to 2,335 acres, with all mineral rights, including precious stones.



Two Views of the Workings of the Crown Diamond Mine.

Development Results.

The development work has shown that in the south-western, western and north-western sections of the mine the ground is [illegible] and of a better grade than in the old workings. Tests of ground taken from these sections have given yields ranging from 11·78 to 20·5 carats per 100 loads. In all some 8,714 loads have been tested from various points in the mine, and they gave an average yield of 14·68 carats per 100 loads. Investigations in the section show that there is considerable improvement in depth, and at the 540 ft. level a larger area of good blue ground has been proved than on the level above, and a test of 1,089 loads yielded 20·5 carats per 100 loads; valuations of the stones from this test by two independent valuators averaged £2 14s. 4d. per carat, as against an average price of £1 11s. 9d. per carat over all the tests. The prospecting shaft is being deepened, and the development of the next level may prove to be of great importance. The plant will be driven by electricity instead of steam, making for increased efficiency and lower costs. The plans are well in hand, and work on the re-equipment has already been commenced. The consulting engineer says that so far as it is possible to determine by exploratory work and test washings, there is enough blue ground in the better sections of the pipe alone to supply the new plant from the open workings for the next five years, and with improved working conditions, it is probable that this period will be considerably extended. While this work is being carried out, the deeper levels of the mine can be thoroughly explored and tested. The company is exempted from the forty per cent. Government tax on diamond mines, so that profits made will be available for distribution to the shareholders. Notwithstanding the recent depression in the diamond market, a ready sale is always found for the class of stones produced from this mine.

Latest Report.

In the course of his supplementary report dated August [illegible] Mr. [illegible] B. Kingston, the consulting engineer, writes: Since May 11th, the date of my last report, the exploratory work at the 540 ft. level has been extended rapidly. Drives have been carried from the shaft to three points on the circumference of the pipe. The reef, or wall rock, exposed in each case is basalt, showing that the exploratory work is still being done within the zone between the top and bottom of the sheet of basalt described in the earlier reports. It was hoped that the 540 ft. level might be found to lie below this basalt, in which case it was propcsed to carry out special exploratory work. The basalt sheet (already proved to be over 178 ft. thick) through which the pipe bursts its way presents a remarkable feature in this mine. It is difficult to say how this condition may have reacted upon the character and quality of the blue ground below it, but as the cleaner blue ground tested from the 440 ft. level and the 540 ft. level gave a better return than the ground from the higher levels, it appears possible that the blue ground in the deeper levels may prove to be of still better grade. This is a matter of so great importance that arrangements are being made to investigate it as soon as possible. The general conditions met with at the 540 ft. level resemble those at the 440 ft. level, as might be expected, as both levels lie within the zone between the top and bottom of the basalt sheet. The main west drive from the shaft exposed a good deal of hardibank, but this drive is paralleled by another drive a little further south in blue ground.

The Basalt Intrusion.

In the southern section of the mine at the 440 ft. level, there is a 40 ft. band of shale cutting through the blue ground. This is not found at the 540 ft. level, its place being taken by nice clean blue ground from which a test washing of 1,089 loads yielded 20·5 carats per 100 loads, which is a very encouraging result. Among the pebbles and boulders in the blue ground at the 540 ft. level there is a higher percentage of shale and a lower percentage of basalt, suggesting that the bottom of the basalt sheet is being approached. The west drive has not been carried far enough yet to test the new area found at the west side of the mine at the 440 ft. level, where 113 ft. of basalt separated the new area from the main portion of the pipe. At the 540 ft. level the west drive is now in this basalt which here is broken and somewhat easier to drive through than at the level above. This drive will be extended into the new area, and then it is proposed to employ a diamond drill to determine the thickness of the basalt below the 540 ft. level. When this is known arrangements will be made to deepen the shaft and open out a level at a suitable depth below the basalt sheet.

Working Policy.

As the Board have approved the electrification of the plant, the necessary alteration of the plans will be made at once, so that the reconstruction work may be started at the earliest date possible. While the plans are being prepared the material for the foundation is being made ready, especially the sand for the concrete, which has to be carted a long distance. Meanwhile the bulk of the labour is being concentrated upon the work of removing from the open mine the fallen reef which has accumulated during the years the mine was standing idle and upon the mass of hardibank which has to be removed from the south-west corner to expose the good blue ground known to exist beneath and behind it. In addition, pits and tunnels are being provided for the regular extraction of the blue ground on a big scale as soon as the plant is completed. A special floor is being prepared near the site of the new plant, upon which it is proposed to accumulate a reserve of blue ground to be drawn upon in case of any temporary interruption of work in the deeper section of the open mine during periods of exceptionally heavy rain. All the above work will be pressed on as rapidly as possible.

MINERALS SEPARATION.

The report of Minerals Separation for 1921 states that expenditure exceeded revenue by £24,000. This result is largely accounted for by continued depression in the base metal industry, entailing a large decrease in the output of metal by licensees and consequent loss of royalties. Resumption of work to some extent at Broken Hill mines enabled the company's Australian Company to pay dividends on a small scale during the year. The Braden Copper Company in South America treated 676,795 tons of ore, compared with 2,141,594 tons in 1920. Thorough investigation is still being carried on with regard to treatment of gold ores. A new plant to treat 250 tons of gold ore a day is now in course of being installed in the Transvaal. The wisdom of acquiring an interest in the new ore reduction process, referred to at the last general meeting, has been amply justified by the continuous successful treatment by this process of many classes of ore at the company's works on a semi-commercial scale. Adoption of this new process will render profitable ores in various parts of the world at present untreatable, and the company has obtained options over considerable deposits of these ores, which by the use of this process are likely to prove of considerable value.

TRADE MARK

MAGNOLIA
ANTIFRICTION METAL
"FLOWER" BRAND.

MAGNOLIA ANTIFRICTION METAL

HAS THE LOWEST CO-EFFICIENT OF FRICTION.
KEEPS down the bill for lubricants, making **BEARINGS** smooth as glass and keeping them **COOL** under heaviest pressures and highest speeds.
Manufactured and Sold By—
THE MAGNOLIA ANTI-FRICTION
METAL CO. OF GREAT BRITAIN, LIMITED,
49, QUEEN VICTORIA STREET, LONDON, E.C.
Agents for South Africa: FRASER & CHALMERS, Ltd., Johannesburg, Bulawayo and Salisbury

Rand Mining Profits and Costs.

JULY AND JUNE RETURNS COMPARED—HIGHER TONNAGES CRUSHED AND INCREASED EFFICIENCY REFLECTED IN FIGURES.

The following instructive table shows the increase in Rand profits and the savings effected in costs in July as compared with June. It reflects the progress of the mines in those two essential particulars:—

Company.	Profit, July, 1922.	Increase.	Decrease.	July. Per ton.	Costs. Decrease.	Remarks.
Aurora Wests	£1,712	£156		24 0	1 1	
Brakpans	†75,661	—	£552	22 9	1 9	† £30,330 strike clean up included.
*City Deeps	66,712	14,862	—	24 2	2 4	Higher tonnage.
Consolidated Langlaagte ...	10,687	5,025		20 10	3 11	Increased tonnage.
*Consolidated Main Reef ...	23,781	17,047	—	26 3	3 0	Abnormal grade and higher tonnage.
*Crown Mines	67,690	24,922		20 1	2 11	Higher tonnage.
*Durban Roodepoort Deep ...	7,398	5,840	—	26 6	3 1	Higher tonnage.
*East Rand Proprietary ...	7,937	—	473	21 10	1 0	Slightly decreased grade.
*Ferreira Deep	5,397	6,782	—	22 0	2 4	Higher tonnage.
Gedulds	30,118	636	-	19 9	1 0	
*Geldenhuis Deep	3,786	6,404	—	22 1	0 8	Better grade ore and higher tonnage.
Government Areas	153,899	—	544	18 5	0 2	
Glynn's Lydenburg	1,343	799	—			
*Knight Central	1,246	936	—	17 5	0 11	Higher tonnage.
Langlaagte Estate	14,459	1,652	—	21 0	3 3	Higher tonnage.
Luipaards Vlei	1,162	—	223	19 7	0 4	
Meyer and Charlton	22,248	2,059		21 10	1 11	
*Modder B.	86,945	5,316		22 3	0 1	Increase.
Modder Deep	66,257	582		18 9	0 3	
*Modder East	9,049	4,948		29 8	3 5	
New Goch	1,003	5		19 2	1 2	
*New Modder	127,933	7,480		17 10	0 8	
New Primrose	1,649	235		18 10	1 7	
New Unifieds ...	2,066	239		18 1	0 6	
*Nourse Mines	8,824	3,232		24 3	2 1	Higher tonnage.
Randfontein Central	45,025	4,526		21 10	0 5	Higher tonnage.
*Robinson Gold	9,692	3,606		18 9	3 6	Higher tonnage.
Robinson Deep	30,084	14,928				Higher tonnage.
*Rose Deep	8,488	—	806	19 1	0 9	Slightly lower yield.
Simmer and Jack	§2,129	809	—			§ Loss. Anticipated higher tonnage about mid-August.
Springs	35,071	6,113	—	24 11	0 9	
*Sub Nigel	5,420	—	495			
*T.G.M.E.	245	81	—			
Van Ryn Estate	9,069	978		20 10	0 8	
Van Ryn Deep	63,000	964		21 3	0 10	
*Village Deep	15,001	2,496		23 9	0 6	Increase; slightly increased grade.
West Rand Consolidated ...	4,208	199		23 6	1 0	
Witwatersrand (Knights) ...	12,255	674		18 4	1 11	Higher tonnage.
*Wolhuters	3,665	1,153		19 2	1 4	Slightly higher tonnage.
Wit. Deep	14,266	4,106		20 11	2 4	Higher tonnage.

The increased profits are due to decreased working costs, as shown, whilst certain companies' profits have been further explained in remarks column.

* Gold calculated at £4 10s. 3d. per oz.; other companies calculated at £4 12s. per oz.

Average price, June, 1922, £4 12s. 6d. per oz.

WILLOUGHBY'S CONSOLIDATED.

The report of Willoughby's Consolidated Company for 1921 states that debentures outstanding at 7th July, 1922, were £59,380. The year's working shows a profit of £13,700. The board has written off £9,250 for depreciation of shares in subsidiary and other companies, and after providing for Rhodesian income tax and corporation tax the debit balance on profit and loss brought in was reduced to £13,233. The Eileen Alannah Mine crushed 18,177 tons of ore of a value of £32,929. Ore reserves at the end of the year were estimated at 45,500 tons. At Birthday Asbestos Mine, of production to the end of August, 2,167 tons of fibre were sold. Owing to trade conditions in the asbestos market, it was decided to temporarily suspend production as from 1st September. The mill was restarted in March. Development work carried out during the year opened up fibre of excellent quality. During the year 4,631 acres were sold at an average price of 24s. 6d. per acre. The total holdings at the end of the year amounted to 1,128,678 acres; net revenue from various sources, £14,457. The net revenue from stands and residential allotments was £2,652.

RYLANDS' STEEL WIRE ROPES

MANUFACTURED BY:
RYLANDS BROTHERS, LTD.,
WARRINGTON, ENGLAND.

SOLE REPRESENTATIVES FOR UNION OF SOUTH AFRICA:—
ARMSTRONGS & MAIN, LTD.,
84, Marshall Street,
JOHANNESBURG.
P.O. BOX 5988. 'PHONE 5203.

LARGE STOCKS ON HAND.

SPECIALISTS ..

IN THE MANUFACTURE AND DESIGN OF
STRUCTURAL STEELWORK.

ARMSTRONGS & MAIN, LTD.,
GENERAL AND CONSTRUCTIONAL
.. ENGINEERS, ..
84, Marshall Street,
JOHANNESBURG.

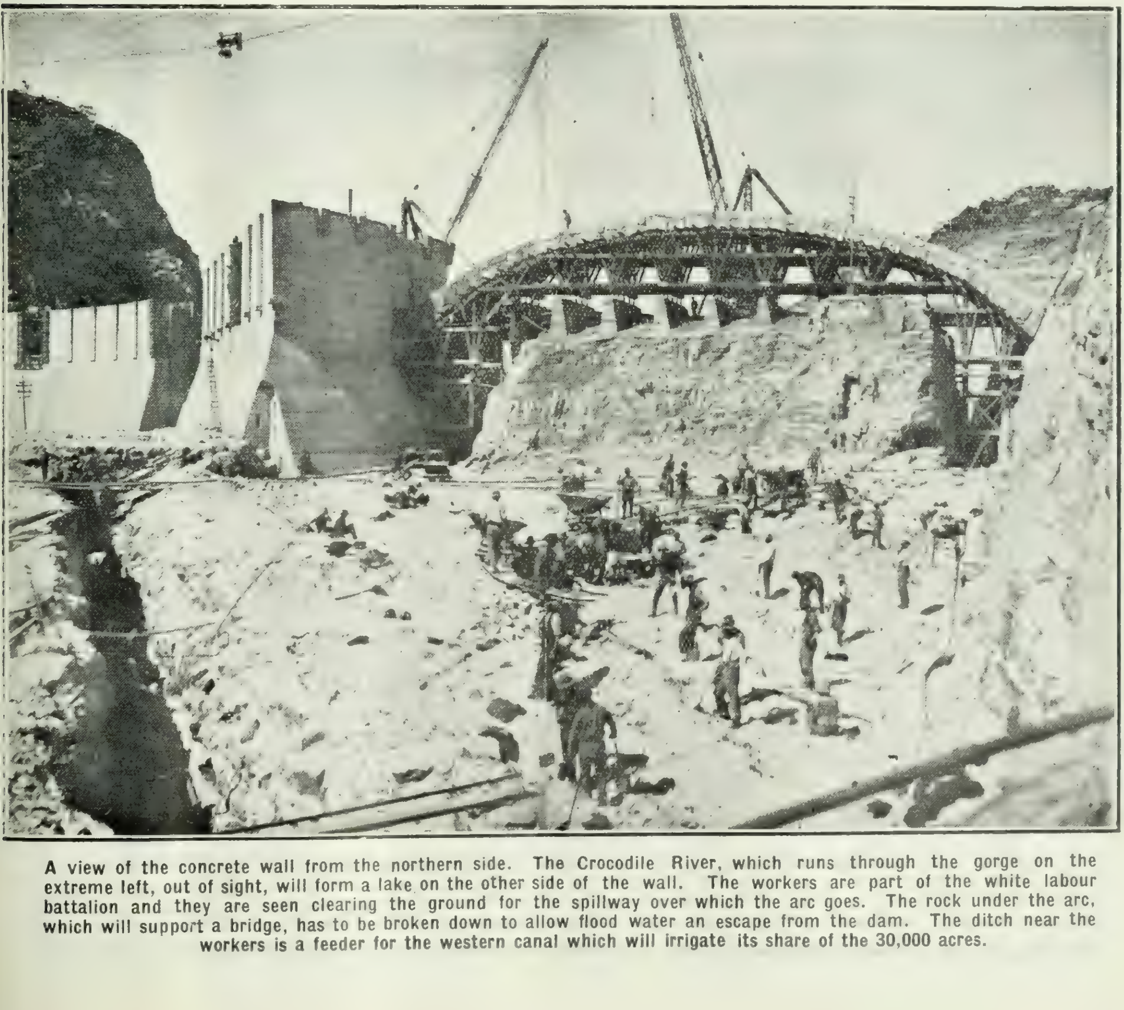
P.O. BOX 5988. TELEPHONE 5203.

The Nigel's Outlook.

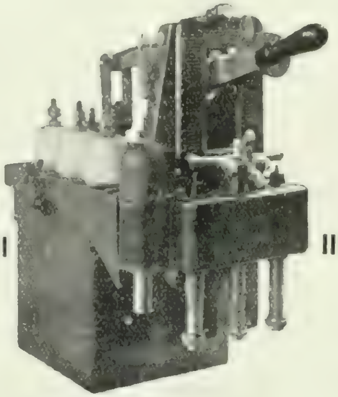
LATEST REPORT.

The Nigel Gold Mining Company had a successful career of over 30 years. Crushing began in 1888, but the mine is now closed down, though there is a chance, as will be seen, of its being reopened under different conditions. Arrangements have been made for Sub Nigel, Ltd., to advance the 16th level of that mine into the Nigel ground, for a distance of 3,500 feet. It is greatly to be hoped that the reworking may be attended with something like the results achieved by the company, which paid dividends up to 50 per cent., and was dividend-paying even so late as 1915. At present the old mine is being subjected to clean-up operations, which have altogether resulted in a return of £5,852 to the company. The liquidator is Mr. Thorburn, whose services the chairman of the company (Mr. Leonard J. Line, J.P.) at a recent meeting extolled. The realisation compares favourably with that of other companies in similar case. The consulting engineer of the old company (Mr. Cazalet), at the request of the board, has reported on the question of future operations. In the Sub Nigel drive a good deal of work has already been done, which will be of great service when the shaft (which, as a commencement, should be sunk 1,700 to 1,800 feet, and be 14 feet in diameter) comes to be sunk. A start might be made with a rising incline reef to meet the one already commenced in the 23rd level above. The cost would be about £5,000, and the sale of superfluous plant would help to pay for it. So far, the drive has not been through good ground, but it is a characteristic of the district to have long stretches of unpayable values. The drive exhibits hopeful features, for, after 1,200 feet of driving with an average width of nearly 3·6 in., the reef was exposing payable values increased to an average of 14 in., afterwards becoming again unpayable for a distance of 800 ft., with averages of 6 in. in width. It is a feature of the Eastern Rand that payable values are only found where the width is increased and strongly developed reef, and these characteristics are in this case noticeable in the 65 ft. of payable values exposed. The view of the board is that, to undertake such work at present would be inadvisable, as conditions are still unsettled, and the recollection of the recent strike dwells in the memory. An appeal for further capital at present would be doubtful of success, hence the decision is "to go slowly in the meantime." But, generally, the board approve the advice given by Mr. Cazalet, who says that much will depend on whether working conditions regarding labour promise freedom from vexatious interruptions, and also on the cost of materials and stores. In his opinion these conditions are at present not established.

The Hartebeestepoort Dam.



A view of the concrete wall from the northern side. The Crocodile River, which runs through the gorge on the extreme left, out of sight, will form a lake on the other side of the wall. The workers are part of the white labour battalion and they are seen clearing the ground for the spillway over which the arc goes. The rock under the arc, which will support a bridge, has to be broken down to allow flood water an escape from the dam. The ditch near the workers is a feeder for the western canal which will irrigate its share of the 30,000 acres.



Witton Oil Switches

Witton oil switches are noted for their sturdy, mechanical strength and conservative electrical rating. Our illustration shows a Witton Switchboard type oil switch, 500 volts, 100 amps. fitted with overload and no voltage trips.

Witton Oil Switches, standardised in all sizes for voltages up to 60,000 volts can be supplied for remote control, electrically or mechanically operated. Stocks are carried in this Country:

The British General Electric Co. Ltd.

Representing THE GENERAL ELECTRIC CO., LTD., of England

Head Office:—
Johannesburg
Corner Loveday and Anderson Streets
Box 2406 Phone 4242/3 Tel.: "Current"

Capetown
83/89, Castle St.
Box —— 1327
Phone —— 1401/2
Tel.:—"Induction"

Durban
56, Field Street
Box —— 922
Phone —— 1793
Tel.: — "Ampere"

Agents at:—Port Elizabeth, East London, Maritzburg, Bulawayo, Delagoa Bay, Beira, Dar-es-Salaam, Tanga, Zanzibar, Mombasa, Nairobi, Uganda, Etc.

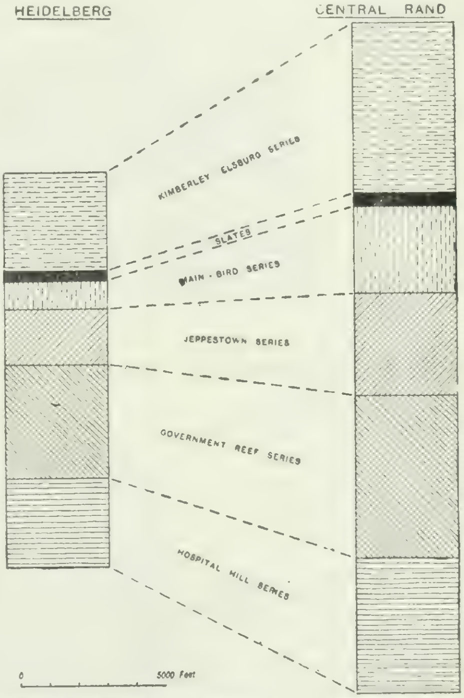
The Upper Witwatersrand Beds in the Heidelberg District.

(By A. W. Rogers, Sc.D., F.R.S., F.G.S.)

The following valuable description of the Upper Witwatersrand Beds in the Heidelberg district is taken from the very full and clear explanation issued with the excellent geological map of the Heidelberg district by the Geological Survey. Dr. Rogers contributes this account of the much-debated geology of the district.

The Main-Bird Series.

The base of the Nigel quartzites, where the conglomerate known as the Nigel Reef is found, is taken as the base of the Upper Witwatersrand beds in this district. In the north-east it is seen in the Nigel-Van Rhyn Mine with a southerly trend, and it crops out on the neighbouring parts of Varkensfontein and Bultfontein, trending in the same direction, but in the Blesbok Valley, 1,300 yards south of the northern boundary of Bultfontein, it turns through a right angle, trending westwards as far as the Rand Nigel shaft, where it turns about 35° north of west for 3,000 yards to the Nigel shafts. Along this part of its course it is concealed by Karroo beds, but it has been exposed at places by shafts and prospecting pits. On Varkensfontein the sub-outcrop takes a sharp turn to the south on to Noycedale, where it is again exposed for about 1,100 yards and has a westerly trend. Soon after the outcrops become concealed under Karroo beds in the west of Noycedale the beds are again bent through a right angle and can be followed on the surface for 3,000 yards on Maraisdrift, the southern part of Noycedale, and the south-western end of Rietpoort. A pit on Maraisdrift, near the fence dividing that farm from Noycedale, marks the position of the sub-outcrop near the bend. The beds are concealed under the Karroo formation for 1,000 yards along the Rietpoort-Poortje boundary, but reappear at the surface some 400 yards north of the main road to the high veld on Poortje. There is a prospecting pit, which exposes the Nigel Reef, on Rietpoort, and a series of inclined shafts have been sunk on it south of the road through Poortje. The beds can be followed almost continuously along the middle southern part of Poortje, where there is a fault along which they are displaced northwards for 300 yards, and on the western side of this fault the beds trend east of south. From these outcrops the Nigel quartzites with a thin conglomerate or coarse grit at their base can be seen at intervals for 6,700 yards, but they are frequently displaced by faults traversing them at various angles to their strike, and in places they are concealed by Karroo beds or obscured by soil. The southernmost outcrops in this area are on Steyns Kraal No. 279, where there is a pit exposing the small pebble conglomerate at the base. For over 1,000 yards on the eastern side of the syncline on Blinkpoort No. 208 a small thickness of the quartzites is duplicated by a strike fault, and near the end of the syncline, on its western limb, there is a similar repetition for a shorter distance, and it is on the western outcrop that the shaft on Blinkpoort within 100 yards of the Natal railway was sunk. From this shaft the base of the quartzites can be followed on to Bothas Kraal, where it passes under an outlier of Karroo beds, and on the north side of this outlier the base is concealed along a fault for 1,600 yards to the north-north-west, where it reappears with a west-north-westerly strike at the old Molyneux Mine. Within the synclinal area the Nigel horizon is brought to the surface in four anticlinal inliers, two on Bothas Kraal, one on Poortje, and the fourth on the boundary of Bothas Kraal and Blinkpoort No. 353. From Molyneux Mine westwards to the outstanding hill on the Houtpoort boundary, and thence north-westwards to a prominent hill on Houtpoort, the horizon is very well exposed, though the regularity of its outcrop is repeatedly broken by dip faults, but at the poort traversed by the railway immediately west of the Houtpoort hill it meets a group of faults by which it is thrown 2,500 yards to the south; where it reappears on the western side of these faults it trends west-north-west for 1,500 yards, and then turns south-south-west for [illegible] yards to a place on De Hoek, where it is cut out by the Sugarbush Fault for some 300 yards; along this part of its course it is at several places dislocated by dip-faults, and for a short distance on the Nooitgedacht-De Hoek boundary the outcrop is repeated by a strike fault. From the western corner of De Hoek it trends westwards, but it is displaced along dip faults on the eastern part of Elandsfontein, and probably by another fault hidden under the alluvium and Karroo beds of the Zuikerboschrand Valley on the same farm. The general westerly trend is maintained through Elandsfontein on to Platkoppies No. 63, but on that farm it turns southwards, and, after displacement towards the east by one or more dip faults, it is cut off by the Sugarbush Fault at a place where it is hidden by Karroo beds.



Sections drawn to scale to show the reduction in the thickness of the major subdivisions of the Witwatersrand system in Heidelberg north of the Sugarbush Fault as compared with Dr. Mellor's estimate of their thickness on the Central Rand

The Nigel Conglomerate.

A description by Dr. Mellor, illustrated by a plan, of the distribution of the conglomerate in the Nigel Mine has been published in several places. The conglomerate worked in the Sub Nigel Mine is directly continuous with that in the

HEAD, WRIGHTSON & Co., Ltd.,

ENGLAND.

——Manufacturers of all Classes of——

COLLIERY PLANT

Headgears and Coal Screening Plants

MAKERS OF

- Headgears.
- Headgear Sheaves.
- Cages.
- Kep Gears.
- Stephen Humble Safety Hooks.
- Friction Driven Tipplers.
- Jigging Screens.
- Marcus Screens and Conveyors, etc., etc.

MAKERS OF

- Plate Picking Belts.
- Deflecting Jibs.
- Raising & Lowering Gears.
- Scraper Conveyors.
- Bar Picking Belts.
- Elevators.
- Creepers.
- Rotary Screens.
- Band Conveyors, etc., etc.

COAL WASHING PLANTS

Designs prepared and estimates submitted by

HEAD, WRIGHTSON & CO.

(SOUTH AFRICA), LIMITED.

64-66, Standard Bank Chambers, Johannesburg.

Nigel, and its distribution is similar, that is, in irregularly bounded stretches elongated in a north-westerly direction. In a section across the streaks the conglomerate is lenticular, and in the intervals between the thicker portions the conglomerate may be represented by a layer of pebbles more or less sparsely scattered through the base of the quartzite, or it may be absent, when the quartzite rests directly on the "shale" below. This is also the character of the conglomerate on its outcrop, the course of which has been described on previous pages, but in the Sub-Nigel Mine the lenses of conglomerate are thicker, two feet or more, and they contain rather larger pebbles, often an inch in diameter, in the lower portions (for the pebbles decrease in size upwards), than in the exposures farther south and west.

Other Exposures.

In the shafts and exposures on Noycedale the conglomerate ranges up to a foot in thickness, and it is still thinner in the pits sunk on it on the western corner of Rietpoort and adjacent part of Poortje. South of the road to the high veld through Poortje the conglomerate is well exposed by inclined shafts, which show pebbles distributed through as much as three feet of weathered quartzite, usually in layers an inch or two thick, rarely as a compact conglomerate 12 inches thick; the pebbles are seldom an inch wide. There are many pits on the Nigel horizon along the eastern limb of the fractured syncline on Poortje, Blinkpoort Nos. 353 and 208, but the conglomerate is usually less than 6 inches thick. On the western limb of the syncline the deep inclined shaft near the railway on Blinkpoort exposes, in the upper part of the incline, a coarse grit only. At the Molyneux Mine, on Bothas Kraal, the conglomerate at the base of the quartzite lying immediately on slate and, as Mr. A. J. R. Atkin informs me, another thin conglomerate 40 feet above it were successfully worked some years ago. The outcrop trending north-westward through Houtpoort has been opened up by several inclined shafts, in which the conglomerate ranges up to 3½ feet in thickness, but in places it is entirely absent, and where it is thickest it is divided into two by a lens of quartzite, above which the upper part of the conglomerate thins out. The deep shaft near the Villiers road west of the Houtpoort stream apparently exposed no conglomerate, but the shafts and outcrops farther south on Houtpoort, Nooitgedacht, and De Hoek show various thicknesses of conglomerate up to 14 inches, and at least a coarse grit is seldom absent. On Elandsfontein No. 281, east of the Sugarbush River, the exposed conglomerate is only 2 inches thick, and in places entirely absent; in the eastern of the two inclined shafts on that part of the farm there is an observable unconformity at the base of the quartzites, which contain slate pellets, just like the clay-pellet conglomerates at the numerous local unconformities within the Ecca and Beaufort Series in the Gouph. West of the Sugarbush River on Elandsfontein shafts have exposed a thin conglomerate, and it can be traced by the outcrops; on Platkoppies No. 63 there is a conglomerate 10 inches thick 15 or 20 feet above the base of the Nigel quartzites, and the westernmost outcrops north of the Sugarbush Fault contain pebbles scattered through several feet of quartzite.

South of the Sugarbush Fault the Nigel horizon is much less frequently exposed than to the north. It is seen almost continuously for 3,400 yards on the right bank of the spruit traversing Malans Kraal, where a thin coarse grit lies directly on the slates and a small pebble conglomerate from 2 to 6 inches thick lies in the quartzite about 10 feet above. On the eastern side of the farm and 1,300 yards north of the spruit a grit bed lying on a thick band of slate has been exposed in a trench, and this grit-slate junction is very probably the Nigel horizon in its normal position as regards the overlying beds in its immediate neighbourhood, while the outcrop along the spruit is a repetition due to a strike fault analogous to the faults exposed on Driefontein and Tweefontein to the east. On Tweefontein the Nigel horizon has grit on it, and it is seen along some 1,600 yards of outcrop in the western part of the farm, 1,000 yards in the central and 500 yards in the eastern part.

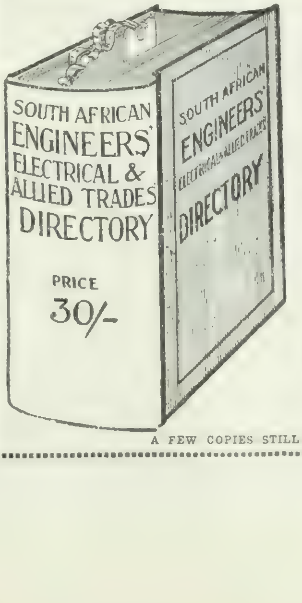
The Pebble Characteristics.

The Nigel conglomerate rarely has pebbles more than an inch in diameter. A feature in it, as exemplified by Mr. Pirow's work in the Sub-Nigel Mine, is the comparative abundance of red jasper pebbles. The petrographical character of the rock presents no unusual feature; the petrography of the conglomerates in the Main Reef Series has been described and discussed in very considerable detail by Prof. R. B. Young, and it is unnecessary to enter closely upon the subject here. Briefly, the rock is made chiefly of pebbles of quartz with other varieties, chert quartzite, schistose rocks, jasper, and quartz-porphyry, in much smaller proportion. The matrix is quartz, chlorite, mica, and pyrites, the latter often replacing quartz. Chloritoid was not seen in the two thin slices cut from rock from Nigel and Sub-Nigel Mines, though it is a common constituent of other rocks in Heidelberg. The felspar in the quartz-porphyry of the pebbles has been entirely replaced by quartz. The quartzites above the Nigel conglomerate and below the Bird amygdaloid contain no constant conglomerates or strong grits, though lenticular beds and washes of small pebbles and coarse grit are frequently seen. The record of a borehole put down to the north of Molyneux Mine shows seven layers of pebbles in 440 feet of rock above the Nigel conglomerate, and outcrops are seen on Maraisdrift, Poortje, Houtpoort, Elandsfontein, Platkoppie, and Malans Kraal. The quartzites are often current-bedded and rippled. In No. 1 shaft, Sub-Nigel, they are 520 feet thick; on Tulipvale and Noycedale they are apparently 870 feet thick. Near the southern corner of Poortje they are about 600 feet thick. Farther south and west these quartzites are so frequently affected by faults and changes of dip that even where they are free from a covering of Karroo beds accurate measurements of their thickness are practically impossible.

(To be continued.)

JULY COMPANY REGISTRATIONS.

Among the new companies registered in July are the following:—Gaynor Electrical Supplies, Ltd., 14 Old Arcade, Johannesburg, capital £1,000; Exchange Engineering Works, Ltd., 25 Chorlton Chambers, Harrison Street, Johannesburg, capital £10,000; General Trust Company, Ltd., Johannesburg Estate Buildings, 74 Fox Street, Johannesburg, capital £100; The Associated Blue Lime Manufacturers, Ltd., 65 Cullinan Buildings, Main Street, Johannesburg, capital £1,000; Quest Gold Mining Company, Ltd., Quest Mine, Buffelsdoorn, district Klerksdorp, capital £480.



INCLUDING
COMPLETE MINING
DIRECTORY
OF SOUTH AFRICA.

PUBLIC SUPPLY
UNDERTAKINGS
RAILWAYS
TRAMWAYS
SUGAR MILLS
&c. &c.

Published by
S.A. Mining & Engineering Journal
Stock Exchange Building
Johannesburg

A FEW COPIES STILL LEFT.

SPECIAL VENTILATION IN MINES

. SIEMENS .
SCHUCKERT
SCHLOTTER
BLOWER.
80% EFFICIENCY.

AIR OR ELECTRICALLY DRIVEN. — COMPACT AND POWERFUL A NOTEWORTHY ADVANCE IN DESIGN.—MOTOR CANNOT BE OVERLOADED WHATEVER THE DUTY DEMANDED. — THE IDEAL BLOWER FOR DEVELOPMENT WORK.

BRANCH OFFICE FOR SOUTH AFRICA :

C. KLEUDGEN, LTD.,
Corner of LOVEDAY and MARSHALL STREETS, JOHANNESBURG.
P.O. Box 1164. Telegrams : "KLEUDCO." Telephone Central 5435

Points About Robins Conveyor Belts—No. 2

The ordinary conveying belt usually stretches many feet in length and decreases perceptibly in width during the first month or so of its operating life.

This results in frequent stoppages of the conveyor, due to slipping of the drive, and in the necessity for much belt-cutting and re-splicing.

Of all the Robins belts installed on the Rand, not a single one has stretched enough to require re-splicing, nor have any of them narrowed preceptibly.

Every Robins Patent Belt, when properly applied to a particular duty, is guaranteed not to stretch more than one per cent. during its life.

This important quality is the product of manufacturing experience and an intimate understanding of the operating pecularities of belt conveyors.

Robins Conveyors (S.A.), Ltd.
(Head Office : Robins Conveying Belt Co., New York, U.S.A.)
BOX 4736, Telephone 4182, JOHANNESBURG
BOX 811, Telephone 3383, DURBAN

Kinghorn Metallic Valves

SOLE AGENTS :

GEO. CRADOCK
—AND CO. (S.A.), LTD.—
75-77, CULLINAN BUILDINGS.

P.O. Box 316. Telephone 539.
Tel. Add. : " ROPES."
JOHANNESBURG.

The South African Mining and Engineering Journal.

HEAD OFFICE: 176-180 Stock Exchange Buildings (2nd Floor), Fox Street, JOHANNESBURG, Union of South Africa.

Telephone **913.** P.O. Boxes **963** and **4573.**

Cables and Telegraphic Address "MINING JOURNAL."

ANNUAL SUBSCRIPTION RATES: Oversea, £2; Union of South Africa and Rhodesia, £1 10s.; Local Delivery (Town only), £1 6s., payable in advance.

AGENTS FOR GREAT BRITAIN AND AMERICA: Argus South African Newspapers, Ltd., Byron House, 82-85, Fleet Street, London, E.C. 4.

Copies of this Journal are obtainable at all Branches and Agencies of the Central News Agency, Ltd., at all News Agents and Railway Bookstalls throughout South Africa, and at the London Agency as above.

CONTENTS.

	PAGE.
Improving Prospects of the Central Rand ...	1673
The Dormant Mines of the Rand: I.—The Van Dyk	1675
New Era for Crown Diamonds ...	1677
Rand Mining Profits and Costs ...	1679
The Nigel Outlook ...	1681
The Hartebeestepoort Dam ...	1681
The Upper Witwatersrand Beds in the Heidelberg District ...	1683
Topics of the Week ...	1687
Recent Advances in Rand Metallurgy ...	1691
The Cyanide Process ...	1692
Letters to the Editor ...	1693
Share Market ...	1695

Rhodesia Section:

Rhodesian Mining Developments ...	1696

Trade and Industries Section:

The Week in the Mining Material and Engineering Trades ...	1697

TOPICS OF THE WEEK.

The Conciliation Conference.

Up to the time of going to press no statement has been issued by the conference sitting under the auspices of the Mining Industry Board to consider the relations between the employers and the labour unions in the mining industry. It is understood, however, that the proposals submitted by the Chamber of Mines, which were described in our last issue, were discussed in detail, and that substantial progress has been made towards agreement on the fundamentals. The V.F.P. management, who with the gold producers and the colliery owners are represented at the conference, have submitted a memorandum in which they qualify their agreement with the Chamber of Mines' proposals. As an official statement regarding the results of the meeting may be forthcoming at any moment, further comment may be withheld till it makes its appearance.

The V.F.P. and the Conciliation Board.

The qualifications with which the V.F.P. Company subscribes to the conciliation proposals of the Chamber of Mines are set out in a letter addressed by Mr. Bernard Price on behalf of the Power Company to the Mining Industry Board. Mr. Price begins by stating that the company holds that the serious handicaps which the mining industry has suffered during the past few years, and which culminated in the recent strike, are traceable in the main to an extension of the activities of trade unions far beyond their proper sphere and to the abuse of power by them. "The loss of efficiency consequent upon a weakening of managerial control is strikingly reflected in the large reductions of working costs on the mines since the strike, and the root cause of this loss of efficiency has been trade union interference in matters on which the employer alone should have the deciding voice." Mr. Price proceeds to give reasons for deciding that "In future the company does not propose to negotiate with trade unions on matters other than rates of wages, hours of work, and such general questions affecting all members of the union concerned as in its opinion are matters for collective bargaining. All other matters affecting an individual employee or a group of employees will be discussed and settled direct with the individual or individuals concerned. The question as to whether a particular matter is or is not one to which collective bargaining should apply will be considered on its merits by the management in each case as it arises. Trade union officials will not be admitted to conference with officials of the company at the company's works. It will be seen that the method of procedure under the new regime will be very similar to that which has obtained in the past, but the personnel on the employee's side, present at any meeting with trade unions, will be confined to representatives of the company's employees who are members of the union or unions directly concerned with the matter at issue, and to whole-time officials of such unions."

Mr. Price continues: "With regard to the question of conciliatory machinery, the company has considered the proposals submitted to your Board by the Transvaal Chamber of Mines, and feels doubtful as to the wisdom of establishing permanent machinery of this character at the present juncture. The matter is one on which the company would prefer to preserve an open mind pending the discussion which will take place during the forthcoming conference."

The last statement leaves the way open for the company to fall in with the views of the Chamber at the conference. The V.F.P. people can hardly be blamed for assuming the attitude of "last ditchers" in view of the experience they had in the recent trouble. But that they will not stand in the way of a general and final settlement we have no doubt whatever.

Brighter Diamond Outlook.

With the settlement of the coal and other strikes in America, the outlook for diamonds is now improving. In the course of their latest report, the Kimberley Chamber of Commerce state: "From the darkness appears a faint glimmer of hope that the slightly improved tone in the diamond market, together with an improvement in home trade, may lead to at least partial resuscitation of the diamond industry in a very few months."

Rhodesia's Minerals and the Union.

That General Smuts is not unmindful of the importance of the mineral resources of Rhodesia, and that he will not spare efforts to obtain them from the Chartered Company, was shown by his speech at Gatooma last week. *Inter alia*, he said:—"Let us recognise that mining is playing a very important part in our community. In my opinion no Government that genuinely studies the interests of the country, and that really wants to foster the development of Rhodesia to its fullest extent, can close its eyes to the fact that mining is a pioneer industry that must be fostered and helped in every possible way. To me, personally, it was very disappointing indeed that I could not agree with the Chartered Company as to the expropriation of their mineral assets, because I look on them as the principal means of the development of this country. I think that if the Government of South Africa could acquire those minerals they would have one of the most potent weapons possible in their hands to push forward the development of this country. Unfortunately, there were a number of unlooked-for complications. This was a question bound up not only with Southern Rhodesia, but with Northern Rhodesia as well. We were very hard pushed. There was very little time allowed us for these very difficult and necessarily protracted negotia-

[illegible] and the result has been that we have not been able before the date given to your Government to come to an agreement on that point. I have, however, this feeling very strongly, that if ever you are to come into the Union, which is a question for yourselves, and yourselves only, to decide, that a determined effort must be made in such an event by the Government to get control of the mineral resources of this country."

General Smuts himself would doubtless be the first to agree that the mining laws of the Union are open to improvement. That, however, is not the question at issue. If the mineral rights of the Chartered Company are acquired for the people, they will have to be developed on the lines of the present Rhodesian mining law rather than on those of the ultra-conservative Transvaal law.

The Latest German Debacle.

The breakdown of the London Conference and the default of Germany have been the great topics of the week. The Reparations Commission seems to have given Germany a further brief respite, but it is clear that Germany cannot meet her obligations, either now or later. Every economist of standing in Europe, as was pointed out when the Reparation payments were first fixed, knew that Germany could neither afford to pay nor her creditors to receive such vast sums. At this distance from the Armistice, and in the light of the disastrous débâcle of world trade which has followed the attempted execution of an impossible policy, it may be possible to reconstitute the position; at least the time is judged ripe for the creation of a favourable atmosphere in which to make the attempt. That Great Britain should take the lead in the matter is hardly cause for surprise, for as a great manufacturing and exporting nation it is vital to her interest that the economic stability of Europe should be restored at the earliest possible moment. It is equally in the interest of France, but hitherto that view has not appealed to the French people, who are obsessed by the idea that a prosperous Germany would constitute a constant and imminent menace to their national life. Moreover, on the purely financial side, the French are unable to contemplate with any equanimity the possibility of foregoing the reparation due to them. For four years the French Government has budgetted on the basis that this money would duly be paid, with the result that a public debt now exists in France which on the face of it is beyond the ability of the people to pay. As things stand, it is certain that France's only chance of obtaining any substantial payment on account is to allow Germany time in which to reorganise her economic forces, and even to assist her in the process. By way of making the path easier for France, Great Britain is prepared to remit, or postpone indefinitely, its claims on her, and at the same time to ease the general situation by substantially modifying its claims against Germany. In well-informed financial circles in London it is declared that no real progress towards settlement is possible without the active co-operation of America, the ultimate creditor of all the nations. Great Britain has at all times admitted, and has recently again affirmed through Ministers in Parliament, her responsibility for her indebtedness to the United States, and if Congress insists that that indebtedness must be discharged in full, discharged it will be. Obviously the whole amount of 950 millions, due at call, cannot be paid at once, but it can and will be funded on mutually satisfactory terms. The great difficulty in dealing with America is that the mass of the American people is so indifferent to extraneous affairs, and so selfishly absorbed in its own well-being, that the principle underlying the policy of enlightened selfishness makes no general appeal whatever. Any Administration which came out boldly to-day with a policy of remission of debt, would probably be swept from power by a wave of popular resentment. It will probably be some considerable time before any real and practical scheme involving actual remission of debt can be accepted by Congress; but in the meantime it is satisfactory to note that the Press is rapidly coming to see that the present attitude of selfishness is not only unwise, but actually injurious to the national interest. The comments of the leading New York papers are certainly encouraging. The *World*, which carries considerable weight, says that if the French accept the British offer, the reparations figure becomes deflated to a possible amount, and hints that America can hardly stand by and be outdone in enlightened policy, while the *Tribune* goes even further in support of the proposals. It would be easy to exaggerate the importance of these Press views perhaps, but side by side with them we have the fact that leading bankers and economists on the other side of the Atlantic are speaking their minds out very plainly. In an address before the Bankers' Institute in Philadelphia, Mr. F. I. Kent, Vice-President of the Bankers' Trust Company, put the matter with great clearness and logic. After stating that legally the debts were due from the Allies in full and could be enforced by America, Mr. Kent considered the moral aspect of the problem. He suggested that, as a large part of the money loaned was loaned for the purpose of enabling the Allies to hold on till America could get her armies into the field, and was therefore directly responsible for saving American lives, it was really part of America's general contribution to the war, and he added: "It would seem very doubtful whether the people of the United States, with this knowledge, would be willing that the loans should be repaid." The difficulty is that the people have not yet got that knowledge, and it may be a long time before they acquire it. In the meantime the important thing is that remissions, cancellations and a general policy of reorganisation of indebtedness are being actively canvassed in all countries, and what we may call, for want of a better term, more enlightened views are being spread. This is certainly all to the good, for the events of the past week have proved that the United States will have to abandon its passive attitude if the situation is to be saved. Meanwhile the world awaits the next move by France.

Notes & News.

Transvaal Silvers.

An interesting paper on the plant and equipment of the Transvaal Silver property was read at this week's meeting of the South African Institution of Engineers by Mr. H. W. Clayden, the consulting electrical engineer to the company. We hope to print extracts from the paper in an early issue.

* * *

Middelvlei Estate.

Some interest has lately been manifested in the Middlevlei Estate in view of its position on the Far West Rand. At the recent annual meeting the Chairman said: "We are keeping as close touch as possible with prospecting work which may be done from time to time in the vicinity of your company's property, and in this connection I would refer you to the paragraph in the directors' report referring to the boring operations which have been carried on on the farm Luipaards Vlei No. 10. As you know, the country upon which your company's property is situated is very broken from a geological point of view, and considerably more work of the nature referred to will have to be done before it is possible to judge the bearing of the results that such operations may have on the mining prospects on your mynpacht."

* * *

Diamonds and Coal.

Seventy-two collieries were producing in the Union during June, the total tonnage mined being 1,104,024 tons. Total coal sold amounted to 896,695 tons, the value realised at the pit's mouth being £316,029. The only by-product obtained was coke—1,662 tons. The total tonnage of coal railed from Union collieries during the financial year ended March, 1922, was 10,299,377 tons, as compared with 11,357,581 tons in the preceding year. Of the former total, the Transvaal contributed 6,103,214 tons, Natal 3,389,550 tons, Orange Free State 803,314 tons, and Cape 3,299 tons. Union production of diamonds during June was 47,106 carats, valued at £153,538, and the total for the six months was 288,020 carats; value, £998,697. On the whole the position manifests some improvement. New York cables indicate that the demand for better grade stones is maintained.

Another West Rand Small Mine.

A correspondent writes: In your last issue you give particulars of a number of small mines in the West Rand. Another resuscitated mine in that neighbourhood is on Doornkop No. 46, on the property which formerly belonged to the New Steyn Estates, but which now belongs to the Armistice Syndicate, Ltd. The Armistice Syndicate have tributed some of their claims to Mr. J. W. Ashworth, who has continued the development work initiated by them, and is erecting a battery which will be in commission early in September

* * *

Swaziland Minerals.

Important developments are promised at an early date relating to the opening up of large unprospected mineral areas in Swaziland. The only work hitherto done has been along the western border for gold, and in the Mbabane district for tin. Recently a tax was levied by proclamation on mineral concessions on which no active mining has been undertaken. A conference is to be held between the Government and representatives of the taxed mineral concessions at which representatives of the mineral concessions affected will propose the throwing open, for prospecting and pegging, on terms to be arranged with the Government, an area approximating 3,000 square miles. A very large portion of Southern Swaziland is unprospected, though it is recognised as mineralised. Any equitable arrangement between the concessionaries and the Government will be an important factor in the country's development.

* * *

A New Swaziland Railway.

The news contained in a telegram from Mbabane is important in its relation to the Kosi Bay or Sordwana Bay project, observes the *Pretoria News*. The railway through Swaziland, as originally planned, took off at Breyten, about 50 miles west of the Swaziland border, proceeded almost due east, over the boundary to Bremersdorp, still in the same direction, and then made a decided turn to the north, crossing the Portuguese border at M'bubizi Poort, opposite the Portuguese railhead, which, by the way, is a little short of the Swaziland border. There are two Usuto rivers in Swaziland, the Little and the Great. The one referred to in the message from Mbabane is probably the Little Usuto, which, flowing north-east, intersects the proposed route very close to Bremersdorp, and continues in the same direction to empty into the Great Usuto some distance south. The Great Usuto flows almost due east, and, when well within Portuguese territory, turns north-east and discharges into Delagoa Bay. The new route, which Mbabane now reports as being under survey, thus probably branches off from the original at Bremersdorp, and will cut across the extreme north of Zululand, to have its terminus either at Kosi Bay or Sordwana Bay. Whether the original line planned to connect with the Portuguese line will also be carried out remains to be seen. The new route will serve not only new coal deposits of North Natal, but also the great undeveloped coalfields of Swaziland itself, which are at present untapped because of lack of rail facilities. Since the new East Coast port is to be primarily a coaling centre, the new route may be fraught with immense potentialities for Swaziland, which, by the way, is also known to contain gold over a considerable area.

* * *

T.G.M.E. Position.

The recent rich strike of ore in the Elandsdrift mine of the T.G.M.E. is reported to be developing in a most encouraging manner. Meanwhile it may be noted that the London Chairman, at the meeting which was held in mail week of the shareholders on that side, said, *inter alia*: "On the output of over 60,000 ounces of gold the drop in price made a difference of over £28,000, but what was of more serious import was that if they had only been able to get the standard price of gold they would have been faced with a serious loss. Their future depended largely on the results of an energetic prospecting and developing programme in the hope of discovering and opening up ore of a higher grade than they had at present available, coupled with an earnest endeavour to reduce working costs. The fresh ore developed during the year reached the high total of 257,525 tons, of which 186,630 went to replace the ore milled and 70,895 to swell their already large reserves, bringing them up to 673,760 tons, or over three and a half years' supply of ore for the mills; there were developed nearly 40 per cent. more tons than were milled. The one 'fly in the ointment' was that there was a decrease in the value of the reserves of ½ dwt. per ton. The cash position was a strong one, the cash and gold consignments account amounting to £187,445, against which there were creditors on current account and outstanding debentures, interest and dividends amounting to £22,200. The tonnage treated in the first three months of the current year was 46,840 tons, or 600 tons more than in the same months of last year, while the value of the gold recovered was £73,668, which was only £509 less. It was satisfactory to find that, apart from the price of gold, they were not losing ground.

* * *

Rand Share Prices and Values.

The following points have been cabled by Mr. Alfred Lewis to the English and other papers: "It is possible that at least 1s. 6d. per ton further reduction in costs from stores, improved machinery, etc., will be made in the future. Village Deeps, Langlaagte Estates, Durban Roodepoort Deeps developing well; Auroras exceptionally so. Van Dyk's prospects attracting attention; possible reconstruction rumoured. South African sentiment is undoubtedly bullish, but banks are neutral. There will be fluctuations before the top is reached, but prices are not yet high in most cases, Robinson Deeps excepted, which have risen prematurely and out of proportion to other shares. Middelburg Collieries, Ltd., have made gold discovery, and the £10 shares, now 10s. sellers, are being split into 200 shares of 1s. each."

* * *

The Outlook for Mozambique.

We have received a copy of the commercial report for last year on Portuguese East Africa, written by H.B.M. Consul-General at Lourenco Marques. In the course of a commercial review, the Consul says that from such evidence as is available from the budget returns of the last few years, the financial condition of this country should be sound. In every year since 1908-9, with the exception of the first two years of the war, there has been a handsome surplus over the estimated revenue. On the other hand, there are no figures published to show how far, if at all, the actual expenditure in these years exceeded the estimated expenditure. There is believed, however, to have been no important excess in this respect. The debt on the country is less than half a million pounds sterling, and the interest and sinking fund charges are met with ease; and the taxes are light. The customs statistics of recent years for the whole country show a great preponderance of imports over exports, amounting to over 50 per cent. in the period 1915-1919; these figures, however, make no mention of the chief article of export, which is native labour, the gain from which, in the forms of emigration tax, railway fares, customs dues, and earnings brought back into the country, is reckoned to be at least, and probably more than, one million sterling annually; moreover, the earnings of the very important transit trade of the country, particularly at Lourenco Marques, Beira and Chinde, must also be taken into account. With these two large items added, it is reasonable to assume that the trade of this country is much better balanced than at first sight appears. In the essentials, therefore, that is, in output as compared with consumption, the position in this country should be fairly satisfactory, but during the last year or so the financial difficulties of Portugal itself, as shown by the continuous fall in the value of the escudo, have had an almost paralysing effect on the import trade of the country, while the fall in the prices obtainable for produce in Europe, the height of sea-freight, increased taxation on certain exports and fear of forced sale to the Portuguese Government at low prices, have had an equally paralysing effect on the export trade; the outlook, therefore, is gloomy, and though the budget for 1921-22 calculates on a greater return than in the last two years in customs dues and other taxes on trade, it is difficult to see where the money is coming from.

It pays to instal Hydromite

Why not use the Hydromite
.. for Back Stoping ? ..

It is designed and built for the job. It weighs only 58lb.

It does not create dust, and Hand Hammer Drill Steels .. can be used with it. ..

When you compare it with a Hand Hammer Drill mounted on a cradle doing the same work, it has the further advantage of being much less in initial cost and much lower .. on cost of maintenance. ..

CLIMAX DRILLS

— THE —

CLIMAX ROCK DRILL & ENGINEERING WORKS

LIMITED.

INCORPORATED IN GREAT BRITAIN.

49, STELLA BUILDINGS,

Corner Rissik and New Streets, — JOHANNESBURG

P.O. Box 4256. — Telegrams "THUMBSCREW." — Telephone 2794.

Recent Advances in Rand Metallurgy.

CORDUROY CLOTH IN MILL WORK REDUCING EXTRACTION COSTS—IMPROVEMENTS, ACTUAL AND POSSIBLE.

(By a Special Correspondent).

The recent advance in metallurgical practice entailing the use of special cloth covering before the mortar boxes in stamp mills, demonstrates anew the extreme necessity of research work in mining. The use of copper plates in mill practice is well known to all men connected with the mining world and generally a more or less accurate knowledge of the process of recovering gold by the addition of mercury to the copper plates whereby the free gold in the crushed ore is held in the form of a gold amalgam is quite commonly held. Apart from this, however, the fact that mercury amalgamation is not an ideal method for the recovery of gold is less generally known. Mill men are fully alive to its shortcomings and would be only too glad to provide a substitute for its use in their work were such a method known to be practical. Until the advent of the tube mill on the Rand milling practice was stereotyped and no attempt was made by anyone to alter the tried and proved methods of extraction of the gold by the use of copper plates and mercury. With the introduction of the tube mill a big step forward was made both as regards economy in output and increased efficiency in the extraction of the gold contents of the ore chiefly by means of the all-sliming process, *i.e.*, the grinding of the ore to a uniform minus 200 grade denoted by the expression—200 mesh.

Results of All Sliming.

The practice is now almost general, the chief exceptions being the older mines of the Rand where the life of the mine or the grade of the ore mined is such as to preclude the possibility of large capital expenditures being incurred for new and up-to-date installations. The results produced by these improved methods have been excellent and have proved the soundness of the views of the metallurgists who advocated the changes. With an extraction of nearly 100 per cent.—98 per cent. actually—very little remains to be done in the direction of increasing the recovery. In point of fact the direction in which the energies of reduction men are fixed to-day is that of reducing the costs of extraction and not in increasing the yield of gold. Here there is abundant scope for the introduction of new methods in all directions.

Some of the factors in costs are outside the purview of the Rand engineer, amongst them being those of cyanide, zinc and sulphuric. In the mill, however, there are many problems to be faced and overcome, all tending towards the reduction in cost of material, etc. Amongst these are:—(1) Standardisation of mill parts. (2) Distribution of power in the mill and cyanide. (3) Systematic annealing of working parts subject to shock or vibration. (4) Judicious use of mercury in the mill. (5) Recovery of zinc from slimes and its use as a paint constituent. (6) More enduring lining in tube mills and other problems, all of which have a direct bearing on costs. The above list comprises only points of possible improvement in current practice and will therefore not be discussed here.

To Replace Mercury.

Coming more immediately to the objective of this paper, the factor of the use of mercury remains to be considered. There are grave reasons for a consideration of a possible substitute for mercury entailed in the necessity for constant vigilance to prevent theft of amalgam in the mill. The conversion of gold into amalgam affords abundant opportunities for theft by reason of the fact that access to the plates is rendered extremely easy. The plates must be exposed at intervals for dressing, scraping, and the removal of the accumulated amalgam, and in this way and in the handling of the amalgam by several persons favourable opportunities are afforded to the dishonest person to steal the gold. There is no doubt but that this is the source of most of the illicit gold obtained in the Union. There is the further industrial reason against the use of mercury in its effect on amalgamators. Cases of mercury poison are known on the Rand and provisions have to be made against the possibility of claims arising from this cause. Over and above all this, however, is the loss entailed by the use of mercury on the plates, due to incomplete attachment of the mercury to the copper, the flouring of the mercury causing direct loss of gold. The loss of amalgam due to the scouring action of sand on the plates, and finally and most cogently, the fact that only gold is recovered by this means. The labour factor must not be ignored, since every mill must have specialists, called amalgamators, whose work consists in the proper treatment of the plates and the subsequent treatment of the recovered amalgam for the gold. The above causes have led recently to the discovery of the adoption of the material known as corduroy for the recovery of mill concentrates.

Present-day Rand Metallurgical Equipment.

The Use of Corduroy.

The method consists simply in the utilisation of the ribs of the cloth as riffles for the retaining of the heavy portions of the pulp as it comes from the mill. Its great function is to effect a separation of the valuable portion of the ore from the lighter and less productive pulp. The action of the cloth is therefore somewhat similar to that of a Frue Vanner, except that in the former case there is no motion of the cloth itself; the pulp flows from the mortar boxes or from the tube mill over the cloth which is spread over a table or frame, and the rush of pulp and water carries away the lighter material and a portion of the gold contents but leaves behind in its path the coarser gold, black sands and other heavy material. At intervals the cloth is removed and its contents worked off into a suitable receiver from which the concentrates are removed and smelted for the recovery of the gold in the usual way. It will be seen then that the following important advantages are apparent by this method. The complete elimination of mercury as a factor in the recovery of the gold. The removal of the need for skilled labour in the treatment of the plates for amalgamation (the mechanical operation of removing and replacing the trays on the tables being done by kafirs). The removal of temptation to purloin amalgam. The recovery not only of the gold but also that of the rare metals associated with it in the ore, *i.e.*, platinum, palladium, iridium, etc. Since the concentrates can be reduced to small proportions by the magnetic removal of the iron, the further recovery of the gold from the remaining concentrate leaves the residium available for further treatment for the extraction of the metals of the platinum group. In conclusion it may be said that: The use of corduroy cloth acts as a concentrator. The cost of substitution for the present method is small. There is a pronounced economy in skilled labour. The resulting recovery value in gold is higher than with mercury. The residues can be treated for the recovery of the rare metals, and in this way will add to the extraction values from the ore.

The Cyanide Process.*

STORY OF ITS DEVELOPMENT.

How Inventive Genius was Inadequately Rewarded.

(By Alfred James.)

Early Work Metallurgically Successful but not Generally Adopted at First.

The lack of success of these two expeditions, from the point of view of forcing a process on an industry or gaining adherents, in no way damped the ardour of the Board. Before long a fresh expedition was planned to Africa (in the latter part of 1888), and a year later MacArthur was also sent off on an expedition to America. This latter expedition of MacArthur's was not a success; indeed, it was not until some years later, after the process had accomplished great things in Africa and New Zealand, and Dr. Scheidel had proceeded from the latter territory to California, that the application of the process in Mexico and the success of cyaniding at Mercur compelled the attention of the mining interests of the United States.

It will thus be seen that, of four expeditions, one only, the African, was successful in gaining adherents, and even then a further expenditure of time, money and energy was necessary to force the process into general use.

Let us look into the history of the African introduction. A study will serve to show the enthusiasm, skill, courage, capital, and business energy necessary to convert even a successful demonstration into a general adoption. The pioneer in Africa arrived towards the end of 1888, and in accordance with his instructions at once proceeded to Lydenburg, Barberton, and the Horo mines, in Swaziland, it being the intention of the board to demonstrate the process in either the first or last-named district. Certain investigations were made by the pioneer which decided his future course of action; but his visit to Barberton and his investigations at the United Pioneer (Moodies) caused J. H. Cordner-James to form a local syndicate, at the outset consisting of J. M. Buckland, W. W. Webster, and himself, to acquire the African rights of the process. This step was the first real encouragement received by the keen and determined Scotsmen who had been so long pushing the process, and it undoubtedly was the cause of the subsequent demonstration being on so large and effective a scale.

The First Trials of the Cyanide Process on the Rand.

From Barberton the pioneer came to the Rand, and after an examination underground, possible mainly owing to the extreme courtesy and kindness of the late Hermann Eckstein, of well-nigh every mine of note (over eighty) in the district, from the Nigel to Blaauwbank and Malmani, he settled down to conduct a series of experiments in an assay laboratory at the Langlaagte Estate, placed at his disposal, entirely without charges for laboratory, stores or labour, by the liberality and shrewd foresight of Mr. (now Sir) J. B. Robinson. The investigations completed, the African pioneer returned to Scotland to consult with his board as to the offer made by the local syndicate to purchase the South African patents. This was subject to the success of a public demonstration of the process to be held at Johannesburg, and the pioneer designed the necessary installation and brought it to Johannesburg early in 1890.

Meanwhile, one of those worries which daunt the most enthusiastic inventor cropped up in the matter of patent rights. On his original arrival in Capetown the pioneer had found that Dr. Wernher von Siemens (represented by E. Lippert) had a patent for a cyanide process, with electrical precipitation, dated only a month after the MacArthur-Forrest patent. Young and inexperienced, the pioneer did not deem it necessary to worry his board with such disquieting information; he decided on the spot to raise an action for the revocation of the Siemens patent. That such an action had never before been brought in the Colony, and that his attorneys proved also to be the Siemens attorneys, in no way disquieted him. His attorneys had to choose between the two clients and to proceed with the action. This step was most fateful to the future of the South African patents, for on his arrival at Pretoria he found that some local difference of opinion as to the difference between the Taal and High Dutch had caused the postponement of the acceptance of the MacArthur-Forrest application until a month after that of Siemens, who thus had prior rights in the Transvaal. Nothing daunted, a similar action—but with apparently less ground—was raised at Pretoria to that started at Capetown, and a report made by letter to his board as to the condition of affairs and his consequent action.

The result is distinctly interesting. The Cape Courts decided in favour of MacArthur-Forrest, as the true and first inventors; and the Transvaal Court, although in this case Siemens had the prior date, decided to follow the decision of the old Colony. I am informed that these were the first two patent actions in South Africa. On so little hung the fate of the introduction of the cyanide process into the Transvaal!

(To be Continued.)

---

* Engineering and Mining Journal.

Letters to the Editor.

TRANSPARENT QUARTZ.

To the Editor, S.A. *Mining and Engineering Journal.*

Sir,—I shall be very glad if you will allow me, through the medium of your journal, to ask if any of your readers can inform me where transparent quartz (colourless or coloured) can be obtained in South Africa in commercial quantities. I have been informed that it is found, or has been found, on the Olifant's River tin fields, but I do not know any particulars as to when it was found or by whom. —I am, yours faithfully,

ENQUIRER.

SOME "LABOUR" VIEWS.

To the Editor, S.A. *Mining and Engineering Journal.*

Sir,—The recent learned discussion at the Law Courts before the Mining Commission was both academic and practical. We marvel what evidence the Commissioners will finally be guided by when assessing the verdict. Economic law is inexorable and cruel; human law is the law of God and the law of the people. The discussions beg the whole principle afresh. At the outset of the low grade mines stunt, Sir Evelyn Wallers enunciated a fallacy when he declared "that the mines were producing a commodity the enhanced cost of production of which they could not pass on to the consumer." After Napoleon's wars the price of gold was fixed at £4 per oz. on the cost of production, in the following fashion: The average oz. of gold that came into the world was based and priced on the cost of production, taking into consideration the alluvial gold that came in cheaply, the deeper mined gold that came in extensively, and even the capital that was sunk in "wild-cats" that produced no gold—all in the average oz. 900 fine cost round or about £4 to produce—and the price was fixed accordingly—surely this fixation is on the cost of production. But the gold producers of to-day surround themselves by "mystery" men of technique and science—nebulous professors and statisticians producing statistics based on foundations of sand—they may prove anything or nothing, e.g. The Chamber of Mines has produced statistics to show a great decrease in the mortality rate from pneumonia of tropical natives, through the inoculation by Lister's vaccine. This pneumococcic vaccine is claimed to render the tropical native immune from attack by the pneumonia bacillus. Certain mines used Lister's vaccine, others did not. The Chamber's tabulations over a period of years show a decreased mortality rate, but the mines that did not inoculate with Lister's vaccine show a like decrease in their mortality rate from pneumonia. This decreased mortality rate I claim to be due in both cases to the better housing conditions, better diet, better sanitation, the abolition of the night shift, and especially to the initial medical examination to which the recruited boy is submitted before allowing him to go underground. The foregoing statistics could go unnoticed if their appalling consequences were not to fall on the inhabitants of this line of reef. Should the Mining Commissioners decide solely on economic law, we can see that in the future the unskilled white man will be forced to compete with the Union native for unskilled work. The result would be that both would combine to raise the rate of pay to carry on strong body. This is quite intelligible and on the boards. Now if the embargo on recruiting natives from north of latitude 22 degrees south of the equator be removed, the Chamber can so dilute the mine labour force with savage labourers that semi-savage "union" boys are swamped by numbers. The civilised poor white is also rendered harmless to combine, and so the vicious circle continues. Apart from this, it is quite feasible that these tropical boys will introduce the germ of sleeping sickness to the homes of the inhabitants of this line of reef. Surely it is time a public meeting was called to deal with this latest policy of the Chamber of Mines. Are the inhabitants of the glorious and bright horizon going to be further stampeded into signing away the destiny of coming generations because frothy, fallacious economic laws and statistics say so?—Yours, etc.,

L. P. SHERIDAN.

[Frankly, we give it up.—Ed. S.A.M.J.]

OUR BUNKER AND EXPORT COAL TRADE.

Some Practical Views.

To the Editor, *S.A. Mining and Engineering Journal.*

Sir,—I have just arrived in England from South Africa on a ship which goes on the Australian route. They take in coal at London, Hamburg, Capetown, Natal and Australia and through the strike last year they had also some American coal. The chief engineer was keenly interested in getting the most out of his fuel, and went at the problems in a very intelligent manner. I was as keen to know how our different African coals behaved and he wanted to know more about them, so we hit it off very well together. The ship was one of the old substantial kind—the sort that has built up British prestige in the last quarter of a century. Built on the Clyde about 25 years ago; engines, plain solid triple expansion, no frills, but capable of excellent work; speed 11 knots; boilers the usual Scotch pattern marine boiler, pressure 180 lb.; boiler evaporation and bunker space based on the calorific value of the good coal to be had in every port in these "good old days." Just the ordinary type of merchant ship which is likely to hold its own for many a day yet, and is possibly representative of 75 per cent. of the ordinary merchantmen afloat to-day. My opportunity of first-hand knowledge of various fuels as commonly burned at sea was unique. I may give you the information more fully later on, but the gist of it is: Home fuels are still the best, but even here there was the qualification, "when you get the good ones." In the last six months I have amply confirmed this on seeing the analysis of seams at present worked and comparing with those I knew in former years. Natal coals come next. Neither German nor American fuel—as it reached him—were comparable with Natal. Witbank and Australian are much the same. Now about results. This boat—like so many others designed for a high-class coal—had to go most of the time under forced firing, and this did not tend towards economy, but it is what has to be faced in the limited space on vessels. Natal coal, with its higher carbon content, shows up well under these conditions, and Buffalo coal, he thought, was about the best he got. Others he also named, and, generally speaking, it was the coal with over 70 per cent. carbon that showed up best. Witbank coal was not nearly so good, and did not even show the results its analysis—compared with Natal—should give. The reason is the high volatile low carbon content. In a land power station the most can be made of this quality, but at sea there is the human element—the stokers. Fires must be cleaned in rotation by the different watches; the fires are then built up to a thick bed of incandescent material quite irrespective of the class of coal. An engineer *may* get a few stokers who will adapt themselves to the various coals supplied at different ports, but any attempt at instruction in the way to burn any particular fuel would end in mutiny, besides, as my friend put it. What is Witbank coal? In Natal I get Buffalo, Enyati, Hlobane, Navigation, etc., and know that is the same as on the last voyage, but at Capetown they give me Witbank coal, and there are big differences in its burning. Questions as to the ship's agents soon told me that he was getting many or any Transvaal coals (mostly, I believe, from Witbank area), but when we know how little difference there is between the coal supplied by a large number of collieries in the Witbank area and the great regularity of these seams compared with most coalfields what greater argument could there be for individual names for fuel and against any general classification and grading by areas or analysis? Even of the same grade as in this case, it is evident that one ship will get satisfaction and the other won't. Under the prevailing conditions, the [illegible] with ordinary coal in ordinary circumstances—but with the high volatile coal they acted like retorts when [illegible] sumed. and was partly consumed in the smoke chamber (where there was a leak of air), or went up the funnel in the form of black smoke. This trouble is inherent to ships and [illegible] owners that their coal is not particularly suitable as a bunker coal. The ash, by the way, represented almost 30 per cent. of the weight of the coal. By the analysis it should have been not over 15 per cent. to 18 per cent., so here was also a loss of about 10 per cent. of the carbon heat. All of which shows that my contention that the average Witbank coal with its excellent shipping qualities is more suited for cargo shipment or consumption in land boilers abroad than for bunkering. Compared with Natal, I would expect that for this purpose it would make up in its hard qualities for any lack in calorific value. Burned under boilers with mechanical stokes, it may be immaterial whether the fuel is in lumps or dust, but the greater number of boilers to-day are still hand fired, and under those conditions mechanical condition is an important matter. If the Government are so very keen on the good name of South African coal, and that nothing but the best should be put before consumers in the world's markets, the obvious thing for them to do will be to forbid the use of any but good Natal coal for ship's bunkers and nothing but Transvaal coal for the export trade. What a mess of business such an action would make, and what a mess in perhaps a minor way any interference with trading will make, excepting so far as ensuring business probity; ensuring that a customer gets what he asks for and what he has contracted to get.—Yours sincerely.

A. DANKS

[illegible]

RHODESIA BROKEN HILL.

Lead, Vanadium and Zinc Products.

In the course of his speech at the recent annual meeting of the Rhodesia Broken Hill, the chairman, Mr. Edmund Davis said: "We have sold our output for 1923 on far more satisfactory terms than those ruling under our present contract, and we have also been able to secure a small reduction [illegible] and in addition, under the terms of our new contract, we should, provided the lead is as rich in silver as it has been of late, receive payment for part of the silver content, which has not been the case in the past. As regards vanadium, we have already entered into two contracts for the sale of 20 tons per month spread over three years, and under this contract we have already delivered 336 tons. As the property is capable of producing satisfactory tonnages of vanadium ore, we are negotiating an additional contract and hope to conclude the same at an early date, the only delay being caused by our desire to satisfy ourselves that there can be no doubt of our being in a position to supply what we may eventually undertake to deliver. We are now working with two modern lead smelting furnaces which were brought into commission, the one on the 1st February last and the other on the 10th May, and we are keeping the original two as a stand-by. The extraction under the new ones is more satisfactory and a larger tonnage is being treated, which you will realise when we point out to you that our output for the first six months of the present year amounted to 11,134 tons of lead, compared with 18,122 tons for our financial year ended 31st December, 1921. We are taking steps to secure a reduction in working costs, and we trust that the staff and the men in our employ in South Africa will realise that we have done everything we can to improve their position, having incurred very large expenditure to make their lives happy and comfortable, and that under such circumstances they will assist us in the suggested economies referred to by agreeing to some reduction in the remuneration they are receiving or, failing that, an increase in their hours of work, as it is absolutely necessary that something should be done. The eventual production of zinc receives great attention. Not only are we carrying out experiments on the property, but we are also having research made in this country, and have had some of our ore treated at works in Belgium. We are now looking into the question of treatment of zinc ores in Africa, and in this connection have begun negotiations with the Rhodesia Railways in relation to railage rates on zinc ore to the Victoria Falls, as it may be desirable to harness power at that spot, though we are at the same time looking into the possibility of obtaining water power at no great distance from our property. When we have this information we should be able to decide whether zinc can be produced in Northern Rhodesia on a profitable basis, but to do this capital expenditure will have to be kept down, and, therefore, it will not only be necessary for the Rhodesian Railway Administration to meet us over the question of transport of plant to the site, but also on the carriage of the zinc production to the coast.."

WE DO THE BIGGEST MERCHANT TRADE IN SOUTH AFRICA.

IRON AND STEEL

BARS, ANGLES, CHANNELS, JOISTS, TEE, PLATES, BOLTS AND NUTS, SHAFTING, Etc.

COPPER AND BRASS

RODS, SHEETS, TUBES, Etc.

M. BROWN, STOCK SHEETS ON REQUEST
180, MAIN ST., JOHANNESBURG.

Telephones 5770 and 3248
Tel. Add.: "MAUBROWN,"
JOHANNESBURG.

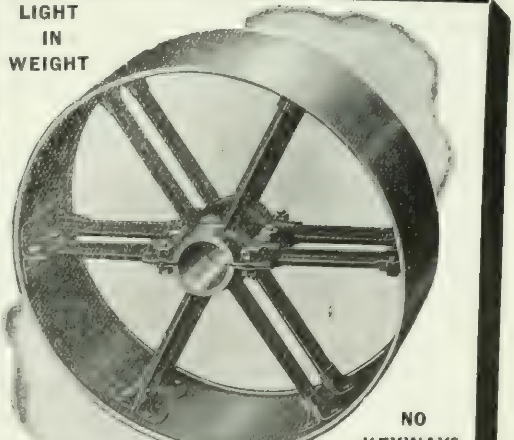
The Week in the Sharemarket.

SEVERAL ADVERSE INFLUENCES WITHOUT DETRIMENTAL EFFECT—EFFICIENCY THE GREAT FACTOR—SOUND UNDERTONE AND OUTLOOK BRIGHT.

Politics, the failure of Inter-Union [illegible], the [illegible] of the month practically going to [illegible], strikes and rumours of strikes, have no effect upon the Kaffir market. Certainly prices ease slightly on profit taking, but in spite of everything there appears to be no sign of a real "setback." From information regarding markets in London it seems that the bulk of the business at that end is chiefly professional, and that the great British public have not yet begun to take a substantial hand in the game, but it is our opinion that there is little doubt that they will be attracted by continued good profits and gradually reduced working costs. There is every indication of the August yields equalling and probably exceeding the very excellent July figures. The strength of the local market is extraordinary, the maturity of time bargain seems to have only a momentary effect upon prices, in spite of the fact that an enormous amount of time transactions have taken place in the past three months. Speaking generally, there is every reason to anticipate a continued big market, with improved prices all round, for several months to come. We may repeat that probably the outstanding feature of our gold industry to-day is the markedly increasing efficiency being obtained from white and black labour, which is bound to be favourably reflected in both costs and profits, and will do more than anything else to bring into the zone of investment stocks that have hithert been entirely speculative.

	Fri. 11th.	Sat. 12th.	Mon. 14th.	Tues. 15th.	Wed. 16th.	Thurs. 17th.
Anglo Amer. Corp.	21 9	22 0	22 3	21 7½	21 6	22 0
Apex Mines	6 9*		7 6*			
Aurora Wests	[illegible] 0*	5 9†		[illegible] 0*	4 7*	5 9†
Brakpan Mines	53 6*	53 0*	[illegible]	53 6*	53 0*	53 6*
Bushveld Tins					0 6*	
Cinderella Cons.	3 9	4 3	[illegible]	[illegible]	[illegible]	4 3*
City and Subs.			2 4			
City Deeps	53 9	53 6	54 3	53 9	52 6*	53 6
Clydesdale Colls		18 6	19 6*	18 9*	18 9*	18 6*
Con. Diamonds	15 3	15 5	15 6	15 [illegible]	15 3	15 6
Con. Main Reefs	15 3	15 1	15 1*	14 9*	14 6	14 [illegible]
Con. Mines Select	14 6*	14 6*	14 9*		14 6*	
Coronation Freeholds	1 0†	1 0†	0 9*	0 10*	0 11*	1 0*
Do. Syndicates	4 11	5 0	4 0	4 9*	4 9*	5 10*
Crown Diamonds	6 3	6 6	7 0	6 9	6 9	6 [illegible]
Crown Mines	49 6*	51 0	52 0	51 0	50 6*	51 0
Daggafontein Mines	4 0	4 2	4 6	4 2	4 0	4 2
E.R. Coals	1 9*	1 9*	2 1	2 0	1 11	1 9*
E.R. Deeps		1 0*	1 0*	1 0*	1 6†	1 9*
E.R. Minings		10 6	10 6*		10 0*	10 6*
E.R. Props	11 6*	12 0	12 1½	11 6	11 6	12 0
E.R. Debentures			58			
Eastern Golds	1 1*	0 8	0 7*			0 8*
Frank Smith Dmds.	3 6*	3 8	3 8*	3 8*	3 7	3 8*
Geduld Props.	65 0*	65 6	65 [illegible]	65 9*	63 [illegible]	65 6
Geldenhuis Deeps	5 9*	5 6				5 6*
Glynn's Lydenburg	14 6	14 0*	14 0*	14 6*	15 [illegible]	14 6*
Govt. Areas	101 6*	101 0*	101 9	102 0*	101 3*	101 0*
Hume Pipes	12 6†	12 0*	12 6*	13 0*	13 0*	12 [illegible]
Knight Centrals	4 9	4 11	4 10*	4 [illegible]	4 7	4 11
Lace Props	11 0	11 3	11 [illegible]	12 0	11 0*	11 3
Leeuwpoort Tins	6 0*	6 0*	6 0*	6 0*	6 [illegible]	6 0
Luipaardsvlei Est	5 0*	5 3*		[illegible] 0†	4 0*	5 3*
Lydenburg Farms		5 0*	5 0	[illegible] 0	4 6	5 6*
Meyer and Charlton	71 0*	70 0*	72 6	70 0*		70 0*
Middelvlei Est	2 0*	2 3	2 0*	[illegible] 3	2 3*	2 [illegible]
Modder B.'s	31 4	31 [illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Modder Deeps	45 0	45 0	45 [illegible]	44 9	44 [illegible]	45 [illegible]
Modder Easts	8 6	8 [illegible]	[illegible]	[illegible]	7 [illegible]	8 [illegible]
Natal Navig. Colls.	29 0†				28 0†	29 6*
National Banks	112 6	110 0			111 6*	
New Eland Dmds.	33 0*	33 0*	33 [illegible]	[illegible]	33 3*	33 0*
New Era Cons.	7 0*	7 0*	7 2	7 [illegible]	7 [illegible]	7 [illegible]
New Geduld Deeps	1 9*	[illegible]	[illegible]	[illegible]	1 [illegible]	[illegible]
New Kleinfonteins	10 0	9 1*	9 [illegible]	9 6	9 [illegible]	10 [illegible]
New Modders	79 3	79 6	79 10	79 11	79 11	[illegible]
New Primrsoe		5 6*				
New State Areas	32 9	32 9	32 [illegible]	[illegible]	32 [illegible]	[illegible] 9
Nigels	[illegible]					[illegible] 7*
Nourse Mines	16 9	17 0*	17 [illegible]	[illegible]	[illegible]	[illegible]
Pretoria Cements	17 0	15 3	[illegible]	[illegible]	[illegible]	[illegible]
Rand Collieries	1 1*	2 0	1 9	1 [illegible]	2 0*	1 [illegible]
Rand Nucleus	1 4*	1 4*	1 6	1 6*	1 6*	1 7*
Randfontein Centrals	14 0*		14 3*	14 1*	14 3*	14 [illegible]
Do. Estates	22 9	22 1½	22 10½	22 10	23 0	21 9
Rouxville Dmds.	[illegible] 6	1 6*	1 3*	1 3*	1 3*	1 6*
Roberts Victors	8 6†	8 6*	7 6*	7 6*	7 9*	8 6†
Rooiberg	3 6†	3 0*	3 0*	3 0	[illegible] 0*	3 6†
Roodepoort United	10 6					
Ryan Nigels	1 0†	1 0†	1 0†	1 0†	1 0†	1 [illegible]
Simmer Deeps	4 3	4 4	4 5	4 6	4 6*	4 3
S.A. Breweries	[illegible] 6*	29 0*	29 0	29 1	29 1	27 6
S.A. Lands	5 7	5 6*	5 6	5 6	5 9	5 7
Springs Mines		47 6*	47 9	47 9	48 0	47 6
Sub Nigels	13 3	13 3	13 9	13 9	14 0	13 [illegible]
Swaziland Tin	[illegible] 6*					
S.A. Alkali	15 0	15 6*	15 6	15 6*	15 6*	15 0
S.A. Townships	10 6*	10 6*	10 9*	10 9*	10 9*	10 6*
Transvaal Lands	16 0†	15 9†	15 9†	16 0†	16 0†	16 0†
Transvaal G.M. Est.	15 3	14 6	15 0	15 3	15 0	15 3
Transvaal Silvers	14 [illegible]	14 0	14 0*	14 0*	14 3	14 0
Tudors		0 9*	0 9*	0 9*	0 9*	0 9*
Union 5 per cent	£102*	£102½*	£102¾*	£102½	£102½*	£102*
Van Dyk	[illegible] 7	1 9	1 11	2 6*	1 9*	1 7
Van Dyn Deeps	70 0*	70 6*	70 0	70 1*	70 3*	70 0*
Village Deeps	14 9*	16 0	15 9*	16 0*	16 3*	14 9*
West Springs	14 7½	14 9	15 0	15 3	15 3	14 7½
West Rand Cons.	5 3*	5 3*	5 3*	5 3*	5 3*	5 3*
Western Rand Est.	5 0*	5 9	5 9*	5 9	6 0*	5 0*
Witbank Colls	37 0†		40 0†	40 0†	40 3†	37 0†
Witwatersrands	16 9*	18 0*	18 0*	18 0*	18 0*	16 9*
Wit Deeps		17 9*	18 0	18 0	18 0	17 9*
Zaaiplaats Tin	2 0*	2 2*	2 2*	2 2*	2 2*	2 0

† Buyers. * Sellers.



"KEYSTONE"

Pressed Steel Belt Pulleys.

PERFECT BALANCE AND TRUTH IN RUNNING
INTERCHANGEABLE BUSHINGS

SAMUEL OSBORN (S.A.), Ltd.

'Phone 4673. JOHANNESBURG. Box 3162.

RHODESIAN MINING DEVELOPMENTS.

Trial runs are now being made on the Marvel Mine, Filabusi, by the owner, Mr. F. E. Cox. The plant consists of five 1,250lb. stamps, with cyanide plant. Water for milling purposes is obtained from the mine and a good supply for the boilers and camp purposes from a well sunk 700 yards away and pumped to the same through a 3in. pipeline (says a "Bulawayo Chronicle" correspondent). There are four reefs on the property, but for the present work is being concentrated on the middle and north reefs. The " Spur " reef, from which good ore was obtained some years ago, will shortly be opened up at the 120ft. level. The south reef, on which a drive was driven for several hundred feet about 20 years ago, is now inaccessible, all the workings having caved in. Good values are being proved on the middle reef, and on the north reef a crosscut put in at a depth of 50 feet has proved the reef to be 14 feet in width. Mr. A. W. Heeley, well known in Rhodesian mining circles, and late manager of the Jessie Mine, is in charge of the property. The Killarney-Hibernia Mines will be taken over in a few days by the company, and it is understood that Mr. F. D. Roscoe, the late owner, has purchased the Antelope Mine, in the East Gwanda district, from Mr. H. Herrington.

Some prospecting work is being carried out on the old Bessie claims, Filabusi, by Mr. Berwitz.

The only base mineral proposition being actively exploited in the Filabusi district is the Pangani Asbestos, owned by Mr. J. S. Hancock, of Johannesburg, and managed by Mr. Filmer.

Steady development on the Scoveni Mine, Essexvale (near the old Matabele Sheba), the property of Messrs. W. H. and D. A. Burrows, in bringing about a greatly improved position. There is an extensive run of ancient workings on the property—one to 90 feet in depth—and below these workings, in driving, a rich shoot has been struck. During June, from 112 tons put through the mill in 14 days, gold to the value of over £600 was recovered. Continued driving still shows good ore, and the prospects of the mine are decidedly encouraging. The reduction plant consists of a 2-stamp 1,250lb. mill, with crusher, driven most economically by a 12 h.p. suction gas engine. A cyanide plant is also being laid down.

The Wardwar, about four miles east from Essexvale siding, recently referred to in these notes, has made a good initial run. In the early part of May the ground was pegged by Mr. E. Warren, mainly on the strength of an ancient working, some good float and a small shaft sunk by former holders. He decided to bring his reduction and cyanide plant down at once from the Kestrel Mine and re-erect it on the Wardwar, despite little development having been done. Early in June the mill was in full running, and Mr. Warren has had the results of his first month's crushing. The strike of the reef has been extended to the east and further old workings disclosed in trenching.

Revived prospecting on the Mullingwane gold belt (formerly known as the Mal[illegible]) has resulted in other new and maybe valuable discoveries. Mr. Tom Coe, lately on the staff of the Gold Oriole, having located an ancient working 320 feet in length, proceeded to sink in the working, and at 30 feet depth found a reef in place, about 10in. in width, carrying very high values. The strike of the reef has so far been proved to about 800 feet and development is being continued. The property has been named the Slaney and it lies on the eastern slope of the Mullingwane hills, about 11 miles from Essexvale siding.

SHAMVA MINES.

In many respects the Shamva constitutes the wonder mine of the world, so far as quartz reef mining is concerned, working as it does above surface on a large scale on ore which only averages 3·5 dwts. Despite the strike in February and March, and the consequent falling off in the output, which realised £457,087, against £538,887 in the previous year, the company succeeded in maintaining its 30 per cent. dividend. The net profit came out at £155,106, as compared with £223,526, and £75,790 is carried forward as against £110,871 a year ago. It had been hoped to effect material economies in working costs, but various causes contributed towards disappointment. Nevertheless these work out at 10s. 2½d., against 10s. 5d., which must be a record at the present time for any class of mine, whilst there is every prospect of further reductions during the current year. A recalculation of the ore reserves, on the basis of the inclusion of a large body of lower grade ore, discloses some 2,800,000 tons averaging 3·5 dwts., as compared with 1,781,000 tons averaging 4·1 dwts. Development continues highly satisfactory in depth, and there is little doubt but that the mine has many years of profitable life still in front of it; in fact, if the ore below the 5 ft. level comes in as well as expected, its life will be prolonged almost indefinitely.

RHODESIA'S MINERAL RIGHTS.

General Smuts has declared in unequivocal terms that the mineral rights of the Chartered Company must be acquired as soon as possible after the territory comes into the Union.

RHODESIA'S RAILWAY RATES AND THE MINES.

The Rhodesian Chamber of Mines having recently approached the Railways, urging a substantial reduction in all railway rates affecting the mining industry in Rhodesia, the Railway Management has replied stating that the question will receive consideration in connection with the general revision of rates and classification now in hand. The Chamber has also requested the Wankie Colliery Co., Ltd., to reduce the price of coal at the pit's mouth at the earliest possible date. These reductions which the Chamber is pressing for, are urgently needed, not only to enable present working mines to be carried on with some measure of success, but also to encourage the development and equipment of new mines in the territory, which is essential if the mining industry is to be maintained without decline.

TRADE AND INDUSTRIES SECTION.

Week in the Mining Material and Engineering Trades.

BUSINESS DULL BUT PROSPECTS CHEERFUL — IRON AND STEEL — TIMBER AND BUILDING MATERIALS—AMERICAN NOTES—ELECTRICAL GOODS—BRITISH COAL—BRITISH TRADE IN JULY—UNION'S TRADE, JANUARY TO MAY, 1922—WIRELESS—METAL QUOTATIONS.

General.

Merchants report that the past week's business has been no better than the previous one. No improvement has been shown; if anything things have gone back somewhat. But, said a commercial magnate, there are undoubted indications that we are heading towards improvement. Those indications appeared to him as certain and that within months—possibly weeks—the commercial community would see better conditions. The present time was naturally a testing one with its dearth of ready money, affecting all classes of the community, but the future was [illegible] assured. Everybody realises to-day the big possibilities ahead of us, the only difficulty of [illegible] big one being the tiding over of the present difficult position. Tightness of money governs the situation to-day, but this temporary phase will, it is thought, not be of long duration. The share market—Johannesburg's truest barometer of business activity—is rising and in the opinion of experts likely to advance, in view of the substantial reduction in wages and working costs recently introduced by the mining industry. There is, however, it must be noted, a widespread feeling that on the whole the cuts in wages have been of a rather too drastic nature and might have been more finely tempered both as regards extent and incidence. However that may be, the increased values of shares generally caused by the present reduced working costs, have undoubtedly induced the public to see big possibilities in the share market in the near future. Our special share market correspondent must be credited with far-seeing prophecies as to the present and future trend of things in respect of our gold mining shares.

Prices on the whole remain much about the same. Timber is firmer, especially in 5 x 9 deals, of which there is a scarcity, which, however, should be relieved within a month. At the moment it is extremely difficult to obtain special kinds of timber for certain work. A big commercialist was of opinion that many big contracts were being held in reserve, which, however, were bound shortly to be released, to react favourably on the building trade, which even under present circumstances is doing not too badly.

The features of the week have of course been oversea, the breakdown of the Inter-Allied Conference in London, and locally the coming together of the Industrial Conciliation Conference. As to the former, the outlook appears to be very dark, but, in view of the gravity of the issues at stake, it is felt that something must and will be done to remove the present *impasse*. As regards the Industrial Conciliation Conference, big hopes are generally entertained that some workable scheme may be found to obviate in future such colossal upheavals in industry as have been unfortunately witnessed in the past. The aftermath of the recent disturbance, which the whole community is now experiencing, should at any rate provide some jumping-off ground for a mutually satisfactory agreement as to future labour conditions.

Iron and Steel.

The Commercial Exchange has been a little more active during the past week, but there has been no big movement and things generally are dull and without that life which was expected about now. Latest London advices indicate that somewhat irregular conditions in business obtain there, the tone being adversely affected by the Continental exchanges. Far-seeing commercial men, however, see good prospects ahead. Stillson wrenches, said a very influential importer this week, are very scarce. Two months ago they were about 6s. 6d., to-day they are 15s.; hammer handles are also very scarce.

Latest Local Quotations.—Dunswart iron, 18s. to 23s. per 100 lb. Union Steel Corporation, Limited, 19s. to 22s. 6d. Imported iron and steel, flats, rounds and squares, from 25s. 6d. to 35s.; channels and joists, 25s. to 28s.; imported angles, 27s. to 31s. 6d.; tee iron, 27s. 6d.; shafting, ⅜ in. down to 3-16 in., 7½d. to 9d. lb. ⅝ to 1½ in., 6½d.; 1¾ in. to 6 in., 4½d.; steel plates, 1-16, ⅛, 3-16, 18s. 9d. to 21s. 6d.; 10 x 5 and larger, 25s.; ¼ to ¾, 23s. 6d.; spring steel, 7d. to 8½d. lb.; bolts and nuts, hexagon, ⅜, 7 5-16d. lb.; ½ in., ⅝ and ¾, 33s. 6d. to 47s. 6d. per 100 lb.; hexagon nuts, ⅜, 8½d.; ½ in., ⅝ and ¾, 7½d.; fish plate bolts and nuts, ⅜ in., 6d. lb.; ½ in, 4d. to 4¼d.; ⅝ in. and ¾ in., 3¾d.; dog spikes, 32s. 6d. per 100 lb.; rivets, ¼ in., 6 5-16d.; ⅜ in., 5d.; ½ in and ⅝ in., 37s. 6d. to 40s. per 100 lb.; ⅝ in., 50s.; brass rods, ¼ in., 1s. 3d.; ⅜ in., 1s. 6d.; ½ in., 1s.; hexagon brass rods, 1d. lb. extra; copper rods, ⅜ in., 1s. 9d.; ½ in., 1s. 10d.; ⅝ and upwards, 1s. 9d. lb.; tool steel, 2s. 11d. to 3s. 3d.; brass sheets, 1s. 10d. to 2s. lb.; copper sheets, ¼ in. to 18 gauge, 1s 10d. lb.; 20 gauge, 1s. 11d.; 22 gauge to 28 gauge, 2s. lb.; firebox copper, 2s. 1d. lb.; copper tubes, ¼ in., 3s.; ⅜ to ⅝ in., 2s. 4d.; ¾ to 4½ in., from 2s. to 2s. 2d. lb.; phosphor tin, 2s. 7d.; ingot tin (Lamb & Flag), 1s. 9d. lb.; ingot lead £28 per ton; drill steel, 5½d.; hollow, 7d. to 8d.; 1¼ in., 6½d. to 8d.; wire nails, 30s. to 35s.; shovels, 27s. 6d. to 46s. 6d. doz.; wheelbarrows, 40s.; picks, 35s. to 40s.; pick handles, 26s. to 30s.; hammer handles, 14 in., 4s. 10d. to 5s.; 18 in., 7s.; 24 in., 8s. 6d. to 10s. 6d.; 30 in., 15s. to 18s.; 36 in., 20s.; piping, [illegible] in., black, [illegible]; 1 in., [illegible]; 2 in., 1s. 1d.; galvanised, ¾ in., 5d.; 1 in., 7¾d.; 2 in, 1s. 7d.; ¾ in. steam, 5¾d.; 1 in., 8d.; 2 in., 1s. 6d.; barbed wire, "Shorthorn," 69 lb., 13⅜ gauge, 19s. 6d. to 21s. per coil; plain galvanised fencing wires, No. 8 gauge, 100 lb. coils, 21s. 6d. per coil; No. 10 gauge, 100 lb. coils, 24s. 6d. per coil; No. 12 gauge, 100 lb. coils, 26s. 6d. per coil; bulb tee fencing standards, 14 lb., 19s. 6d. per dozen; 12 lb., 23s. 6d. per dozen; black baling wire, 14 gauge, 19s. per coil, 100 lb.; 12 gauge barbed wire, 22s. per coil, 96 lb.; plain wire, No. 8 galvanised, 21s. per coil, 100 lb.; fencing standards, 21s. for 12's and 24s. for 11's; droppers, 40s. per 100; screening, 3s. to 9s. 6d. per square yard; cyanide, 1s. 6d.; zinc shavings, 1s. per lb.

British Iron and Steel Prices.

Midland iron, about 84s. f.o.b.; Cleveland, f.o.b., 96s. 8d.; foundry iron, 95s. per ton; No. 3 Cleveland, G.M.B., 90s.; No. 4 foundry iron, 87s. 6d.; No. 4 forge, 85s.; mottled and white, 80s. per ton; medium steel billets, £8 5s.; hard ditto, £8 15s.; soft ditto, £7 15s.; common iron bars, £12; steel boiler plates, £13 10s.; steel ship, bridge and tank plates, £10; steel angles, £9 10s.; steel joists, £10; steel toes, £10 10s.; flats, 5 in. and upwards, £10; heavy steel rails, £9 10s.; fishplates, £14 10s.; iron and ship rivets, £16; black sheets, £13 15s.; galvanised corrugated sheets (24 in. gauge), £16.

Secondhand Machinery.

The market, a prominent dealer reports this week, is fairly good. Several small syndicates have started lately on the Reef and are purchasing machinery. He had just sold a large tube mill to one of them [illegible] and there is [illegible] other machinery required. The most [illegible] that new propositions [illegible] with batteries, and have come to the conclusion during the [illegible] at the Springs Mines on a very [illegible] that tube mills are the coming factor for reducing the quartz to a pulp and getting better extraction than the old style of working with batteries. There have been good inquiries from Natal for machinery for industrial purposes, and the broker already mentioned is now purchasing machinery for them here and in large quantity. There have recently been good inquiries from the Congo and from Rhodesia.

Certain spares for the mines are practically finished, and the mines are compelled to purchase new, whereas when the opportunity arose for purchasing second-hand material they have purchased such, thus reducing costs considerably. This is conclusively shown by several companies' returns. This is due mostly to the engineers of these mines looking out for bargains, and one cannot understand, he said, why more discretionary power is not left in the hands of engineers and the different heads of departments to buy when these opportunities of purchasing second-hand material suitable for particular work on the mines are offered them. It would save the companies a considerable amount of money per annum. The dealer mentioned knows of one engineer on the mines with the full consent of his manager who saves his company thousands of pounds per annum by having discretionary power to purchase. The market for second-hand mining material does not appear to be very dull and there is a better tone everywhere. Several river diggers, who have been lucky of late, have been in town purchasing cranes, pumps and plant. Dealers are looking forward to better times, which they feel will not be long delayed.

British Iron and Steel.

No big expansion has resulted from the settlement of the engineering strike. The Continental demand is disappointing, but sales to America are considerable. Cleveland No. 1 is quoted at 95s. per ton and No. 3 G.M.B. 90s.

The Iron and Steel Industry Encouragement Act (No. 41 of 1922) was promulgated on the 26th inst. The schedule of bounties which may (subject to the provisions of the Act and the regulations) be paid in respect of pig iron and steel produced in the Union, from ores mined in the Union reads as follows:—

Financial Year.	Per ton of pig iron produced.	Per ton of steel produced.
	s. d.	s. d.
1924-25	15 0	15 0
1925-26	15 0	15 0
1926-27	15 0	15 0
1927-28	12 6	12 6
1928-29	10 0	10 0
1929-30 ...	7 6	7 6
1930-31 ...	5 0	5 0
1931-32 ...	2 6	2 6

Engineering Shops.

Inquiries among engineering shops show that amid the present depression things are not too bad in the engineering shops; no big contracts have to be registered, but current work is fair and promising.

Tenders are invited, up to August 24, by the Municipality of Bloemfontein for the supply and delivery of one direct coupled 30 h.p. D.C. dynamo for 200 volt current, and steam engine for 150 lb. working pressure.

Timber and Building Materials.

In the [illegible] all merchants reporting a slow but satisfactory progress. 5 x 9 deals are reported as very scarce, and generally timber is not too plentiful.

Timber Prices: 3 x 9 deals, up to 18 teens, 1s.; over 18 teens, 1s. 1d.; scantlings, 10½d.; beaver boards, 4d.; floorings, 6d. to 6¼d.; ceilings, 4¼d. to 4½d.; Oregon, 5s. 6d. a cube; pitch pine, 7s. 6d. to 8s.; corrugated iron, 7⅜d. to 8⅞d. Furniture timber: Burmah teak, 16s. to 17s. 6d. per cube, Johannesburg; American oak, 1 in., 10½d.; 1¼ in., 11d.; 2 in., 1s. at coast; Japanese oak, 11½d. at coast; West African mahogany, 1 in. to 4 in. thick, 27s. to 28s. per cube, at coast; Rhodesian mahogany, 9s. per cubic foot at mills; Honduras mahogany, 30s. per cubic foot; American yellow pine, 1s. 4d. per foot of 1 x 12 here; American pine shelving, 10d. per ft.; 3-ply wood, 3 m.m. up to 5 m.m., alder and birch, 4d. to 6½d. per sq. ft.; oak and teak, 3-ply, 10d. per sq. ft. Prices per sq. ft.; oak and teak, 3-ply, 10d. per sq. ft. Prices for bricks are practically unaltered, viz.: Klompje bricks, 25s. per 100 at works; fire bricks, £10 per 1,000 at works; mixed, 70s.; wire-cuts, £4 10s. to £5; and £5 for pressed per 1,000, at kilns; columns from 20s. to 30s., according to size; roofing tiles, Marseilles, £25 per 1,000 at the works; chimney pots, 12 in., 7s. 6d.; 15 in., 9s.; 18 in., 10s. 6d.; dry red oxide, 16s. per 100 lbs.; white lime, 7s.; blue plaster lime, 5s. 3d.; blue lime, 4s. 3d.; cement, 10s. 3d. a bag; damp course and roofing, 36s. to 54s. for 1 to 3-ply.

The building trade, said a prominent broker this week, is fairly good; bricks are being taken now freely from the yards. Plasterers are still scarce, and also all employable men, as a matter of fact, there was to-day no unemployment for really good "building" men.

Secondhand Iron and Timber.

Dealers report a slight improvement, not much but something to be grateful for. Prices are about the same, viz., iron 5d. to 6d., timber 7d. to 8d. Stocks are, as previously reported, far from plentiful.

American Notes.

American industrial activity is at last feeling the effects of the serious labour difficulties now prevailing in the coal, railway and textile industries, and there is a noticeable slackening in many lines. It has been difficult to understand why these prolonged strikes have not had a more serious reaction on industry, but the explanation appears to lie in the fact that industry generally has swung back into such activity that in some sections there is even a labour shortage, both skilled and unskilled. It is apparent that as soon as these special difficulties are remedied a period of general prosperity may be expected in the United States.

According to the American Trade Commissioner, Mr. P. J. Stevenson, this is of special interest to South Africa, as it should result in an increasing demand for local raw materials. In fact, the outstanding feature of trade between America and South Africa in the last six months has been the increasing exports from South Africa to the United States. In the first six months of 1922, American imports from South Africa were exactly double those for the last six months of 1921. These figures include only the direct imports, which are admittedly smaller than the re-exports from the United Kingdom and the Continent. This increased American demand for South African asbestos, chrome, hides and skins, in particular, is especially satisfactory. These figures are also in line with the general increase in American imports, which were $260,000,000 in June as compared with $217,000,000 in April and $185,500,000 in June, 1921. At the same time, American exports are about stationary, the June total being $334,000,000 as compared with $318,000,000 in April and $337,000,000 in June, 1921.

The domestic situation in the United States is generally favourable, according to cable advice from the Department of Commerce in Washington. Money is reported as being very easy, while commercial failures are decreasing. Prices are irregular, but with the tendency being upward, June saw new records established in both the building and motor car industries

Electrical Goods.

In this section there is no difference to report from last week. Things are fairly good in town, and outside inquiries lead dealers to hope that better times are coming. An important dealer this week said that the Barberton electric scheme was now in full swing; he had himself received orders in connection therewith to the amount of about £300. The current was expected to be laid on about November next for houses, hotels, business places, etc. This important electrical importer said he looked for big things going before the end of the present year. In the meantime it was a difficult matter to collect accounts, but, with an expressive shrug, he said South Africa will come out all right and, he thought, have a good time, and that very soon

British Coal.

Exports are being well maintained, but home demand is very quiet, and many collieries are working part time. Germany continues to take large supplies, and increased demands are reported from Scandinavia, South America and other markets. Best Admiralty coal is quoted at 25s. per ton, D.C.B., steam coal 24s., Tyne primes 23s. 3d.

British Trade in July.

This showed a welcome increase as disclosed by the Board of Trade Returns. Exports totalled £60,500,000, compared with £43,000,000 in July last year. Imports totalled £81,750,000, compared with £80,500,000 last year.

Union's Trade, January to May, 1922.

The returns issued by the Department of Customs and Excise for the five months, January to May, 1922, show imports and exports below those for the corresponding period of last year. Imports amount to £18,121,319, meaning a drop of about £6,460,000, and exports of South African produce at £19,202,787, a decrease of £3,200,000. Gold export was responsible for much of the decrease, being £7,485;445, as against £13,845,075 for the first five months of 1920. In respect of imports, serious decreases have to be reported, notably in agricultural implements, iron and steel goods and manufacturing machinery. Important to note are the wool statistics. The value is more than half the total for the whole of our exports, exclusive of diamonds and gold. As a matter of fact, during the period mentioned nearly 131 million lb. of wool were shipped, as against about 67 million, the value being £5,690,150, compared with £2,630,677. In respect of coal, 720,637 tons were exported, valued at £527,454, compared with 681,629 tons, worth £844,231. In addition to this, bunker coal amounted to 586,304 tons, value £808,512, against 702,201 tons, value £1,563,680. As regards April, the heaviest decline is visible in machinery, amounting to £1,400,000, while implements and tools, oils, hardware and cutlery, iron and steel show a big drop.

Wireless.

At present the most powerful wireless station in the world has been opened at Sainte Assise in France, which is communicating with all parts of the world. Messages sent out broadcast from this station will, it is stated, be heard in all parts of the world.

Metal Market Quotations.

London, August 14: Standard copper, £64 2s. 6d cash, £64 5s. forward; electrolytic copper, £70 cash, £71 forward; standard tin, £158 17s. 6d. cash, £159 forward; foreign lead, £24 10s. cash, £23 15s. forward; quicksilver, £11 12s. 6d.; bar silver, 34½d.; bar gold, 92s. 5d. per oz.

INVESTORS' DIARY.

Forthcoming Company Meetings.

(a) Annual general meeting; (s) special or extraordinary general meeting.

Meetings will be held in Johannesburg unless otherwise stated.

Aug. 30.—Diamond Fields of Africa Exploring Co., Ltd. (a), 3 p.m.
Sept. 20.—Swaziland Tin, Ltd. (a), 12 noon.
Sept. 21.—Transvaal Gold Mining Estates.
Sept. 21.—General Mining and Finance Corporation, Ltd., (a), 11 a.m.
Sept. 29.—Simmer and Jack Prop. Mines (a), 11.30 a.m.
Nov. 17.—Sub Nigel (a), 11.30 a.m.
Dec. 14.—Glynn's Lydenburg, Ltd. (a), 3.30 p.m.

General Mining and Finance Corporation, Limited.

(Incorporated in the Transvaal.)

NOTICE IS HEREBY GIVEN that the Twenty Second Ordinary General Meeting of Shareholders of the General Mining and Finance Corporation, Limited, will be held in the Board Room, General Mining Buildings, Johannesburg, on THURSDAY, the 21st DAY OF SEPTEMBER, 1922, at 11 a.m., for the following purposes:—

1. To receive and consider the Balance Sheet and Profit and Loss Account, and the Directors' and Auditors' Reports for the year ended 31st December, 1921.
2. To elect a Director in place of Mr. Arthur French, who retires in terms of the Articles of Association, but who is eligible, and offers himself for re-election.
3. To appoint an Auditor or Auditors for the ensuing year, and to fix the remuneration of the retiring Auditors.
4. To transact any other business which ought to be transacted at an Ordinary General Meeting.

The Share transfer Books of the Corporation will be closed as follows:—

(a) At the Head Office from the 18th of September to the 5th of October, 1922, both days inclusive.

(b) In London from the 18th of August to the 26th of August, 1922, both days inclusive.

Holders of Share Warrants to Bearer desiring to be present or represented at the Meeting should deposit their Shares at the places and within the times following:—

JOHANNESBURG:—At the Head Office of the Corporation, General Mining Buildings, *at least three days before the time appointed for the holding of the Meeting*; or

LONDON:—At the London Office (Transfer Department), Winchester House, Old Broad Street, E.C.;

PARIS:—At the Bank de l'Union Parisienne, 7, Rue Chauchat;

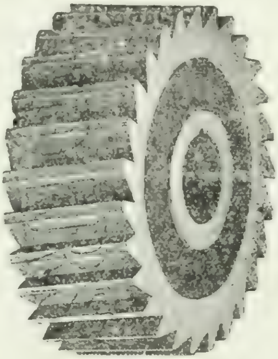
at least thirty days before the date appointed for the holding of the Meeting.

By Order of the Board.

H. W. DALTON,
Secretary.

General Mining Buildings,
Johannesburg.
14th August, 1922.
P.O. Box 1242.

"SaBeN"
MILLING
CUTTERS



LIKE ALL OF SANDERSON BROS. & NEWBOULD'S PRODUCTS "SABEN" MILLING CUTTERS ARE MADE TO MAKE GOOD— THEY STAND FOR HIGHER EFFICIENCY AT LOWER ULTIMATE COST. WE CAN SUPPLY THESE QUALITY CUTTERS FROM STOCK.

SOLE SOUTH AFRICAN AGENTS:
BARTLE & CO., LTD.
LOVEDAY HOUSE. Phones 3553. Box 2466. Wires: "FAGGOT."
JOHANNESBURG
Also at KIMBERLEY and DURBAN.

CARBIDE
—ALL SIZES—
IN 1, 5, 10, 50 lb. TINS
and 100 lb. DRUMS

Apply: MANAGER,
RAND CARBIDE, LTD.,
SOUTH GERMISTON
'Phone 252 Germiston.

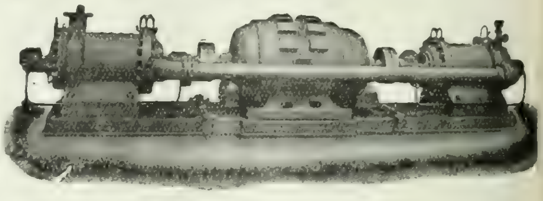
Telegrams: "NIVONIA," Johannesburg.
'Phones: 2196,—2197,—2198

J. & R. NIVEN, Ltd.,
ENGINEERS,
CONTRACTORS,
MERCHANTS.

BALATA BELTING
JAMES DAWSON & SON, Ltd.
BITUMEN SHEETING
GEO. M. CALLENDER & CO., Ltd.
BOILERS
PENMAN & CO., Ltd.
COAL CUTTERS AND CONVEYORS
JEFFREY MANUFACTURING CO.
COLLIERY PLANT
CAMPBELL, BINNIE, REID & CO.
DRILL STEEL
JOHN NICHOLSON & SONS, Ltd.
ENGINES, LOCOMOTIVES
ANDREW BARCLAY, SONS & CO., Ltd.
ELECTRIC LIFTS
A. & P. STEVEN, GLASGOW.
CRANES
BUTTERS BROS., GLASGOW.
HOSE, VALVES, SHEET RUBBER
THE LEYLAND & BIRMINGHAM RUBBER CO., Ltd.
LUBRICANTS
THOS. HINSHELWOOD & CO., Ltd
STEEL SCREENING
THOS. LOCKER & CO., Ltd.

Barsdorf's Buildings, Marshall Street,
JOHANNESBURG.

SULZER
HIGH-LIFT CENTRIFUGAL
PUMPS.
For Mine Drainage, Waterworks, Etc.



Pumping Set suitable for lift of 2,500 ft.

LARGE LOCAL STOCKS IN
MEDIUM AND LOW-LIFT PUMPS.

For particulars apply to:
RICE, WILSON & HERD,
86, 87, 88, 96, Standard Bank Chambers, Commissioner St.
P.O. Box 930 Telephones 2299 & 2300. JOHANNESBURG.
Also South African Agents for
CALLENDER'S CABLE & CONSTRUCTION CO., LTD.
BRITISH THOMSON-HOUSTON CO., LTD., etc., etc.

Rainbow Friction Surface Belting.

Facts

The Strength and Pulley Gripping power of "Rainbow" make it the right belting for Main Drives.

The flexibility of "Rainbow" makes it suitable for cross drives or where idlers are encountered.

"Rainbow" Belting, properly installed, will prove the most economical belting made, giving the greatest freedom from trouble and requiring the least attention.

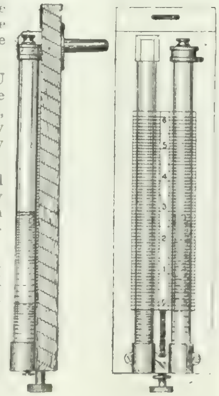
United States Rubber Co. (S.A.) Ltd.

To secure the highest efficiency in your transmission one of our representatives will gladly exchange belting experience with you, with the idea of securing the most service for the money you invest in belting.

Johannesburg
:: Durban ::
Cape Town

DAVIS'S PIT WATER GAUGE.

Davis Made means Highest Grade.



The scale being behind the tubes, the division lines are seen across the whole width of each tube, rendering accurate reading possible.

The tubes, instead of being the usual U shape, are composed of two separate pieces of straight boiler gauge glasses, sealed into a brass block; thus they can be readily and inexpensively repaired.

In the lower brass block a tap is inserted with a small hole, thus considerably contracting the connection between the tubes, and minimising the oscillation of the water column.

The tap may be turned off, thus registering the height of water column, and the Water Gauge brought to a good light to read.

There is an easy provision for filling and re-filling.

Bartle's can supply the Davis Pit Water Gauge from stock.

Made by JOHN DAVIS & SON, (DERBY) LTD., ENGLAND.

Agents for South Africa

BARTLE & COMPANY, LTD.,
LOVEDAY HOUSE. Box 2466. Phone 3553. Wires "FAGGOT."
JOHANNESBURG.
Box 444 KIMBERLEY. Box 1228 DURBAN.

£1,000,000,000.

In commemoration of the production in the Union of South Africa of minerals to the aggregate value of One thousand million pounds sterling,

The South African Mining and Engineering Journal

HAVE NOW IN PREPARATION A

SPECIAL YEAR BOOK

FOR 1922-23.

Which will be a complete illustrated work of reference, containing all facts and figures relating to the South African Mining Industry, its technology and trade, and including valuable maps, diagrams, mine plans and statistical annexures, compiled by experts.

In 20 parts complete in one large and handsomely produced volume.

PRICE 10/6. POSTAGE 1/6 EXTRA.

Order early from the Publishers:
S.A. MINING & ENGINEERING JOURNAL,
176-180, Stock Exchange Building,
Telephone 913. P.O. Box 963.
JOHANNESBURG.

The Crown Diamond Mining and Exploration Co., Ltd.

(INCORPORATED IN THE ORANGE FREE STATE.)

OFFER OF 200,000 SHARES OF 5s. EACH AT PAR, WITH OPTION RIGHTS.

Lewis & Marks Building,
P.O. Box 2567,
Johannesburg,
12th August, 1922.

In terms of the Resolutions passed at Special General Meeting held on the 30th June, 1922, this Company now offers 200,000 shares of 5s. each, forming portion of an increase of capital, for public subscription at par. The whole of this issue has been underwritten.

The terms of subscription are:-

2s. 6d. per share payable on application.
2s. 6d. per share payable on allotment.

Subscribers to whom allotments are made will receive an option for a period of one year to take up further shares in the Company at the price of 7s. 6d. per share in the proportion of five shares for every ten shares so subscribed for and allotted.

Preference in allotment will be given to applications made on the enclosed Form of Acceptance marked "A" by Shareholders registered as such on the 31st day of August, 1922 (or by any person in whose favour a registered Shareholder may have executed the attached Form of Renunciation of rights) pro rata to their shareholding in the Capital of the Company, as reduced at the said Special General Meeting, being, as near as may be, in the ratio of 70 New Shares for every 100 Shares registered in the name of the Applicant.

All applications other than those lodged by registered Shareholders must be made on Form of Acceptance marked "B."

Shareholders and any member of the public may apply for any number of shares by completing the proper Form of Acceptance.

The allotment of shares other than those to which Shareholders have a preferential right of allotment will be at the entire discretion of the Directors of the Company.

The Forms of Acceptance accompanied by a Banker's draft or cheque on Johannesburg for the amount payable on application to be sent so as to reach the Head Office of the Company, Lewis & Marks Building, P.O. Box 2567, Johannesburg, not later than the 6th September, 1922. After that date Shareholders whose Acceptances and payments have not reached the Head Office of the Company will be deemed to have waived their rights to any participation in this issue.

Remittances must be made by cheque or draft on Johannesburg, otherwise cost of exchange must be added at the rate of 2s. 6d. per £100.

If any application be accepted for less than the full number of shares applied for, the surplus amount paid on application will be applied towards the amount payable on allotment, and where any application is not accepted, the deposit will be returned in full.

The options will date as from the date of the Share Certificates.

The issue is made for the purpose of providing Capital to carry out the recommendations of the Company's Consulting Engineer, Mr. C. B. Kingston, by undertaking further exploratory work and reconstructing the plant to enable it to treat 50,000 loads of blue ground per month at a cost which it is estimated will not exceed 2s. 6d. per load of ground treated. This work has already been commenced.

A copy of Mr. Kingston's report on the Mine, dated May 11th, is enclosed, together with copy of a supplementary report from him dated August 1st, bringing the information up to that date. These reports give the results of the recent development work, particularly in the newly-explored area of the mine. Details of the yields from the various test washings are fully set out in Mr. Kingston's reports.

It is in consequence of the very satisfactory results disclosed that the Board of Directors have decided to adopt the Consulting Engineer's recommendations and to vigorously prosecute the exploratory work and reconstruct the plant for the increased production.

The Company is exempt from the Diamond Law which provides for the payment of 40 per cent. of profits to the Government, so that all profits made will be available for distribution to Shareholders.

The diamonds produced from the test washings have been valued in Johannesburg by two independent and leading valuators, and are respectively as follows, the prices being based on current market values:—

From the 160 feet and 140 feet levels, averages of £1 4s. 6d. and £1 5s. 7d. per carat.

From the 540 feet level, averages of £2 15s. 5d. and £2 13s. 3d. per carat.

The average price over all is £1 11s. 9d. per carat. Should the anticipated improvement in the diamond market occur, increased prices may be looked for. In spite of the recent depression in the diamond market, a ready sale is found for this Company's stones.

To Mr. Kingston's report is attached a schedule showing the profit which may be expected from varying yields and prices of diamonds.

By Order of the Board.

THE AFRICAN AND EUROPEAN INVESTMENT COMPANY, LIMITED.

Secretaries.

Per R. W. TOWNSEND.

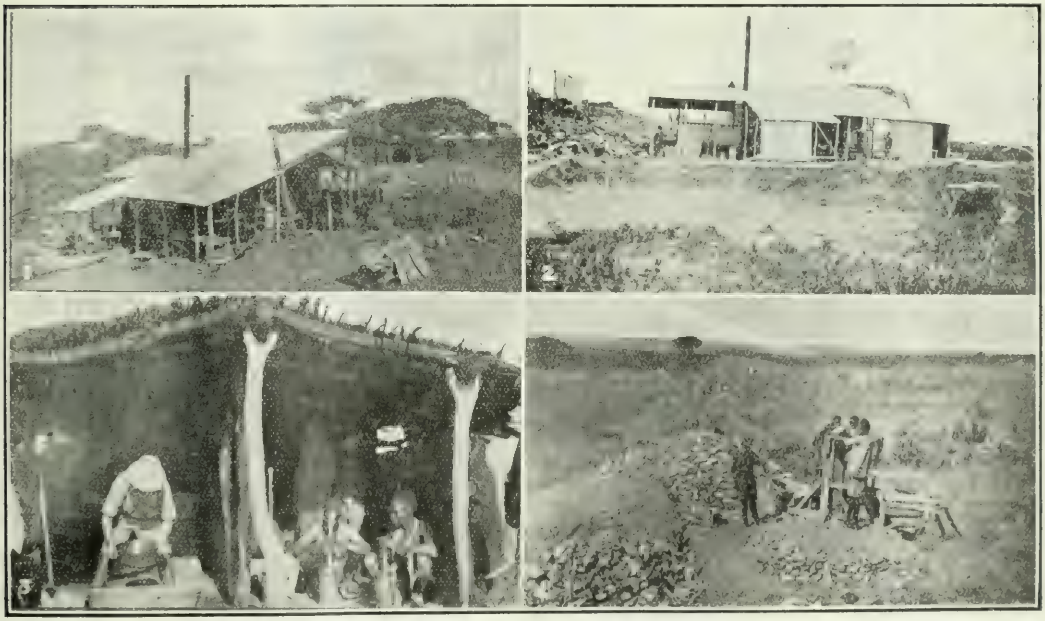
NOTE.—Copies of the Consulting Engineer's Reports referred to above can be obtained on application to the Secretaries, Lewis & Marks Building, P.O. Box 2657, Johannesburg .

Dormant Mines—Daggafontein—The New Conciliation Boards—
Vereeniging Estates—East African Gold.

The South African
Mining & Engineering Journal
THE ONLY MINING AND ENGINEERING WEEKLY PUBLISHED IN AFRICA.
Established 1891.

Vol. XXXIII., Part I. JOHANNESBURG, TRANSVAAL, SATURDAY, AUGUST 26, 1922. No. 1613.

Gold Mining in Former German East African Territory.



THE ABOVE ARE VIEWS OF MINING PROSPECTS IN THE FORMER TERRITORY OF THE GERMAN EAST AFRICAN PROTECTORATE.

1. Mill House (two Tremain's), Kilimafeza Mine, Tanganyika.
2. Mill Buildings, Kilimafeza G.M., Ltd., Tanganyika.
3. C. T. Cogle panning. Panning Shed, Kilimafeza G.M., Ltd., 1919.
4. Winze, Bonanza Reef, Geraff Bucket. Ore milled 21.5 dwts. over plates.

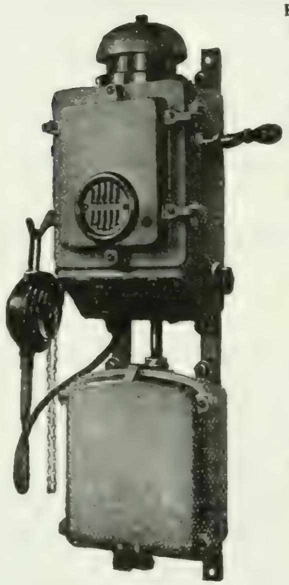
SIEMENS BROTHERS
AND
COMPANY, LIMITED.

MAGNETO MINING TELEPHONES

Hermetically sealed DIAPHRAGM behind extra strong GRID.

Gold plated DIAPHRAGM.

Very strong Dampproof CORD.



Closed.

DEFIES
- Damp
- Dust
- Inflammable Gas
- Rough usage
- Noise

Powerful (1600 Ohm) Watertight SIEMENS BELL.

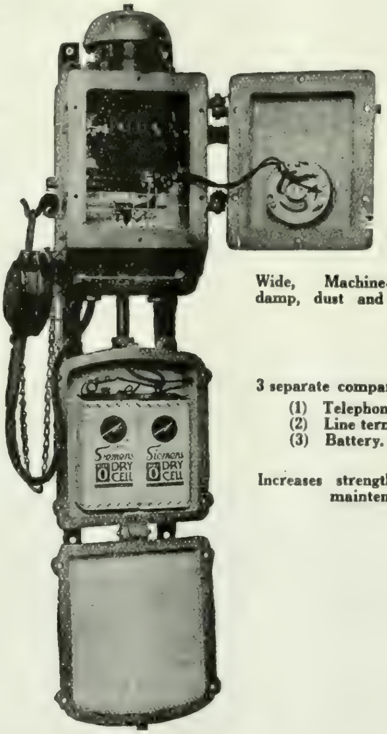
Very powerful hand GENERATOR.

Bare, tinned, copper internal CONNECTIONS.

Loud speaking RECEIVER

CORD specially reinforced here

Highest quality dry-cells.



Very efficient renewable CAPSULE TRANSMITTER.

Wide, Machine-faced joints damp, dust and flame proof

3 separate compartments for:—
(1) Telephone.
(2) Line terminals.
(3) Battery.

Increases strength. Decreases maintenance.

Open.

The above is pattern No. 10. Another—No. 10a—is equipped with two receivers.

Representatives in South Africa :

A. J. G. SIMPSON, A.M.I.E.E,
African Life Buildings, 85, St. George's St.,
CAPETOWN.
P.O. Box 239 Capetown. Telephone : 1202 Central.

G. H. B. BERNARD, A.M.I.E.E.
9-10, Cotts Buildings, Rissik and Fox Sts.,
JOHANNESBURG.
P.O. Box 7404 Johannesburg. Telephone : 408 Central

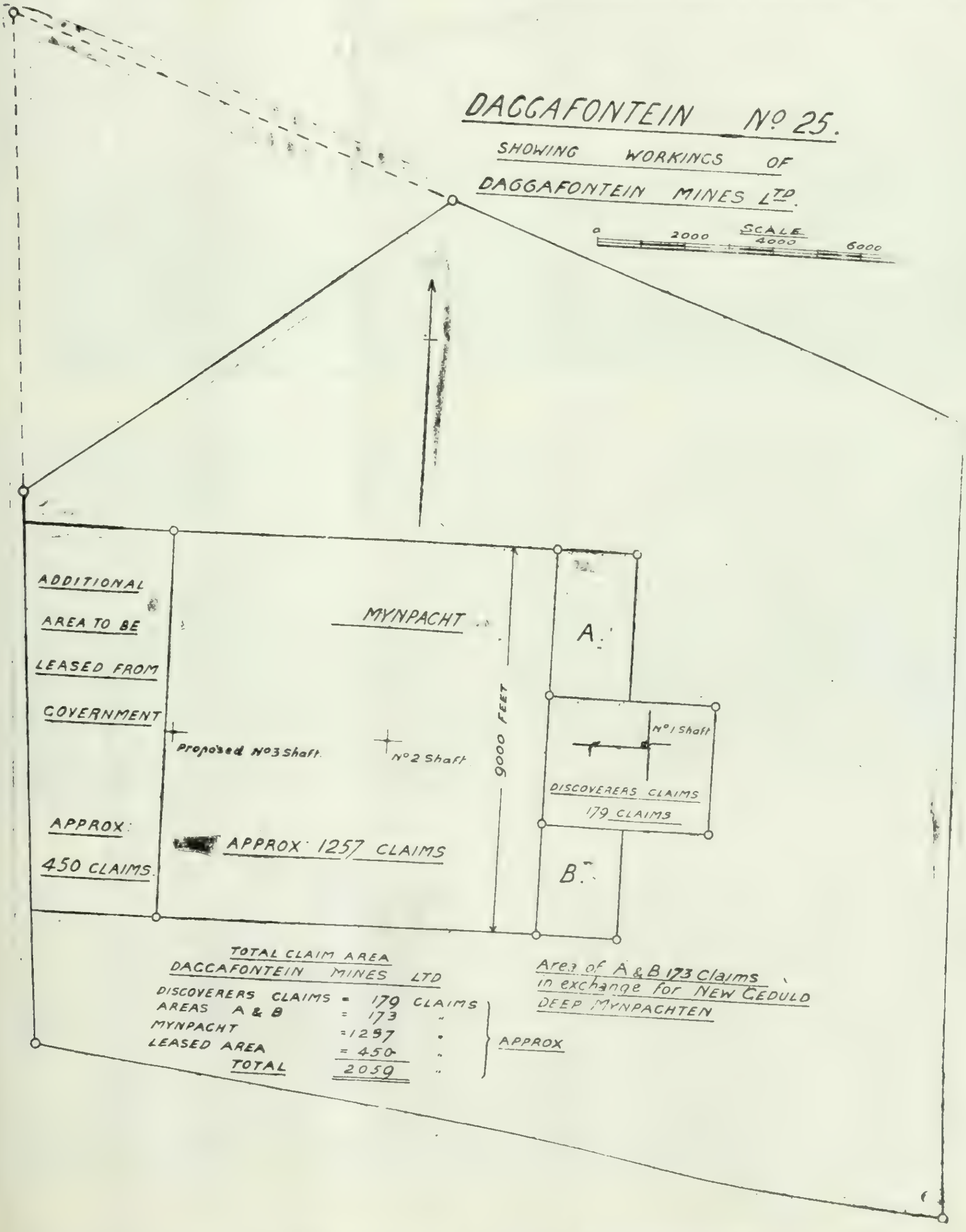
Telegrams : "SIEMENS."

Dormant Mines of the Rand: II—Daggafontein.

A PARTLY DEVELOPED MINE AWAITING THE PROVISION OF FURTHER FUNDS—HOW THE GOVERNMENT CAN HELP.

In a series of articles, of which this is the second, we propose to examine each week the position and prospects of the dormant mines of the Rand in the light of the more economical working conditions now in sight and the improved facilities for raising the necessary capital. The Daggafontein is another good example of a property which is bound in the near future, under the better conditions, to come into its own.

Perhaps the most important among the dormant mines of the Far East Rand which are awaiting the revivifying effect of fresh capital is Daggafontein. In the statement submitted by the Chamber of Mines to the Mining Industry Board it is specified under Class III as one of the properties which stood to benefit directly from a reduction of working costs and increased efficiency. Class III, it may be noted, was described by the Chamber as including "those mines which have sunk shafts to the Reef, and carried out a con-



The Daggafontein Mynpacht. Negotiations are now in progress with the Government for the re-plotting of the Mynpacht and the granting of additional mining area.

[illegible] amount of development and which have exhibited their early results. The Chamber, it will be remembered, pointed that the improvement in conditions—such as a new mynpacht—would no doubt create further interest in these properties so that they may be opened, continue development and become future producers and employers.

The Position Reviewed.

The plan accompanying this article illustrates the Daggafontein claim area at the time of closing down. It is proposed to obtain the consent of the Government to alter the mynpacht so that more of the richer ground in the western area of the farm is included. The Government is believed to be sympathetic, but special legislation may be necessary and cannot be introduced before next session. The position of the property was fully described by the chairman, Mr. F. R. Lynch, at the last annual meeting. As regards the position of the mine, he showed that the sinking of two shafts had been completed, and they had been connected underground by means of the main incline before operations were suspended. In all, some 14,595 feet of development had been accomplished, of which 6,296 feet were on reef, and 6,080 feet had been sampled, giving an average value of 23·41 dwt. over 10·78 inches. Of the footage sampled, 2,660 feet was in payable ground averaging 30·11 dwt. over 15 inches, equal to a payability percentage of 43·75. "Although these results were most promising," he said, "it must be remembered that the values are found in short stretches of reef which are not continuous, and therefore undue weight should not be given to them."

Development Promising.

At the same meeting, Mr. Lynch said: "I would like to impress upon shareholders that the suspension of operations was not due to any lack of confidence in the future of the property, nor has the result of development so far accomplished condemned the mine as an unpayable proposition, in fact, rather the reverse has been the case. It has been demonstrated that the area round the No. 1 shaft is of low grade and considerably broken, but, on the other hand, as progress was made towards the west, the results were distinctly promising. The Consulting Engineer points out in his report that the reef exposures in the station roadways and east incline at No. 2 shaft, supplemented by diamond drilling, gave an indicated value of 23·9 dwt. over 16·2 ins., or 388 in.-dwt. for a total length of 750 feet, east and west of the shaft. Although the distance between our westerly workings and the workings of Springs Mines is considerable, there is every reason to suppose that when mining operations are resumed on our property, and development is carried on towards Springs Mines, we should find an area of payable ground giving values more nearly approaching the results now being obtained in the eastern section of Springs Mines. If that should prove to be the case, Daggafontein Mines may yet prove to be as valuable a property as was originally anticipated." The claim holding now totals 2,059 claims, which is considered sufficient for a mining area provided the percentage of payability is normal. In the case of this property, however, the eastern section is unpayable, and the company has consequently applied to the Government for permission to replot mynpacht.

Government Invoked.

In concluding his speech at the annual meeting, the Chairman said: "Towards the end of last year your directors, having come to the conclusion that the time was probably approaching when money would again be available for mining enterprise, wrote to the Government suggesting certain methods by which our endeavours to provide fresh capital to restart operations might be facilitated, such as the replotting of the mynpacht, the granting of an additional mining area, and relief from taxation. Although our application has, owing to legal difficulties, not proved successful so far, we still hope for sympathetic consideration by the Government. We are anxious to lose no possible chance of restarting this property, which will not only prove the value of the Far East Rand, but will also provide work for a considerable number of men who are unemployed as a result of the recent strike. This country requires capital for the development not only of mining, but of other industries as well, and I think the Government should assist us as much as possible by agreeing to our proposals, which are designed to facilitate the raising of fresh capital funds, especially as a very large sum of money has already been absorbed in the preliminary development of the property."

Letters to the Editor.

MINING SHARE VALUES.

To the Editor, *S.A. Mining and Engineering Journal.*

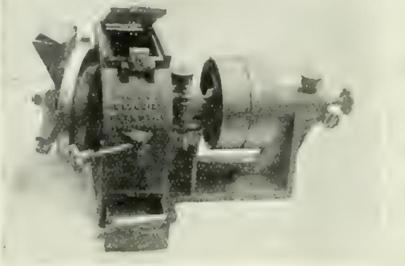
Sir,—I have often wondered as to what percentage of your readers have ever given you credit and thanks for the chances that you have given them to become rich through your subtle and interesting notes lately. I for one, wish to express my thanks for your advice, and from which I have profited, or have the chance of doing so. Your notes on Van Dyks are most interesting, and no doubt will be acted upon by the Small Investor, who seems inclined to sell some of the "Heavies," and go for the cheaper lines. What strikes one most is the fact that some of the dormant mines have values equal to other big producers, and it is only a question of time now when they will be opened up. Auroras look like a safe investment, and would, if sold up, fetch more than the present price at the worst, and at the best, something more. Another shilling reduction in costs will make a difference in the profits, but this is not the last word in costs here perhaps.—Yours faithfully,

SPECULATOR

Mozambique Prospecting.

Major Lionel Cohen, who has been investigating the mineral prospects of Northern Mozambique, is on his way to Europe with many promising samples of gold and other ores. As regards the southern portion of the province, it is noteworthy that a recent six months' prospecting tour of the Lebombo Mountains and Usutu River areas was carried out by a Rhodesian mining man, who recently returned to Bulawayo. The prospect covered the whole of Portuguese territory south of the main Johannesburg-Delagoa railway line, comprising an area approximately 100 miles long by 50 miles broad, the mineral rights of which are held by the Anglo-Portuguese Concessions (E.A.), Ltd., an English company with a general manager in Africa in the person of Major J. S. D. Berrington, whose brother was one of the pioneers of Rhodesia.

The Hush Pulverizer
FOR ASSAY OFFICE USE.



These Machines have now been considerably reduced in price

Prices and Catalogue free on application to:
Ralph Hush, Box 4219, Johannesburg, SOUTH AFRICA

The Year with Vereeniging Estates.

REVIEW OF GREAT LEWIS & MARKS ENTERPRISE ON THE BANKS OF THE VAAL.

The Vereeniging Estates has had another successful year. A full report of the speech made from the chair at the annual meeting last week appears elsewhere in this issue, and affords a comprehensive review of the year's results. The colliery interests of the company, of which Cornelia mine is the most important, are one of its most remunerative assets, but the land and forests and orchards constitute a valuable addition to its undertakings.

Vereeniging Prospects.

In a beautifully produced brochure dealing with the progress of Vereeniging and its industries, issued by the company some time ago, it is pointed out that the recent industrial growth at Vereeniging is very marked, and the opinion that Vereeniging promises to become one of the most important industrial centres in South Africa is confirmed by the evidence given before the Select Committee on the Rand Mines Power Bill on the 13th February, 1919, by the Government Mining Engineer, who said:—"In my opinion the site at Vereeniging is, if not the finest, one of the finest in South Africa for industrial purposes, largely on account of the combination of water—if reasonable facilities are granted for the use of that water for industrial purposes—with coal and in further combination with a healthy climate on the high veld. The three form an admirable combination for the establishment of industries in the neighbourhood of Vereeniging." To these advantages must be added cheap electric power generated at the Vereeniging Power Station. Photographs are given in this brochure of several of the industrial works already established at Vereeniging, and also of some of the agricultural operations on the many miles of freehold land which the company owns.

As the chairman pointed out, the company's position is sound, exceptionally sound, which a glance at the balance sheet will bear out. "This is not a concern to which temporary upheavals or times of depression can do permanent harm. The intrinsic value of your assets is incomparably greater than the figures at which they stand in the balance sheet."

The Company's Farms.

The farms belonging to the company consists of 127,277 acres of land, and of this huge area the company owns the mineral as well as the surface rights of 126,121 acres. Three-fourths of this ground is computed by Dr. F. H. Hatch, M.Inst.C.E., to be coal-bearing. Ten thousand three hundred acres are immediately available for irrigation. Ten of these farms, aggregating 65,000 acres, are riparian to the Vaal River and two of them to the Klip and Zuikerboschrand Rivers as well. The actual river frontage of the farms is over fifty miles. The Rand Water Board hopes to close its barrage within a few months, and when this is done there will be forty miles of perpetual navigable water, 18 miles below and 22 miles above Vereeniging. It is difficult to realise and impossible to measure the extent of the benefit of this water to the town of Vereeniging and to the company's farms. The potentialities of the district have been enormously increased.

The Union Steel Works at Vereeniging, in which Vereeniging Estates, Ltd., is interested.

The Cornelia Colliery, Vereeniging, belonging to the Vereeniging Estates.

Trees and Collieries.

It is noteworthy that the four and a quarter million trees stand in the balance sheet at about threepence-halfpenny each, though their value must be far beyond that figure.

The Cornelia Colliery equipment standing at £115,832 2s. 3d., less the reserve account of £42,529 12s. 9d., giving a net figure of £73,302 9s. 6d., is about half its actual value to-day. "I think," said the chairman, "you will agree with me when I say that, although the dividend you received this year was smaller than you expected, yet your company's position is far stronger than a casual glance at the balance sheet discloses and gives promise of a very much larger return to the shareholders in the near future."

Engineering and Metallurgical Methods at Rhodesia Broken Hill.

PROJECTED HYDRO-ELECTRIC SCHEMES—THE ZINC LEACHING PROCESS DESCRIBED.

(By our Special Commissioner).

The main power plant at the Rhodesia Broken Hill mine consists of two [illegible] kw. sets, operated by Belliss & Morcom engines and driving Crompton generators. One of these [illegible] at present in operation and the other is a stand-by plant or will be employed in the event of the company installing additional plant and requiring more power. There are three Babcock & Wilcox boilers and auxiliary steaming plant. The boilers are fed by coal from Wankie (which costs 12s. 9d. per ton at Broken Hill) and also by wood.

As at other Rhodesian mines employing timber for firing the boilers, the cost of this becomes heavier each year, as the suitable wood fuel close at hand becomes cleared and wood-cutting contractors have to go further afield.

In the near future the company may, unless coal freights are materially reduced, have to consider the installation of producer gas engines, as has been done at the Lonely, unless, of course, (as indeed seems likely) a comprehensive hydro-electrical scheme is adopted and electricity is derived from one of the rivers in the vicinity of Broken Hill for the purposes of supplying current to a large electrolytic zinc leaching plant and operating the mine generally by power obtained from the Lunsenfwa, Mulungushi or Lusambo Rivers.

Were the Victoria Falls Power Company an electricity-generating concern true to its name instead of being a series of steam-driven power plants on the Witwatersrand—in other words, were electric power available from the great storehouse of energy in the Zambesi Gorge, the Broken Hill company would, no doubt, be only too glad to obtain current from this potentially vast source of supply, but as it is the company has to consider the power-generating possibilities of the rivers in closer proximity to the mine and investigations along these lines are now being carried out.

A large amount of power will eventually be required for the electrolytic leaching plant, an experimental unit of which is at present obtaining good results. A brief summary of this process is as follows: Ore containing lead, zinc and vanadium and regenerated acid is fed into the ore leach. The solution from the ore leach goes to the vanadium precipitation tank and from this to the silica precipitation tank. The silica and vanadium are pressed out together in a filter press. The solution now passes to the purification process in which traces of iron, arsenic and nickel are removed. These and other impurities are separated out in the press. The purified zinc sulphate solution is then fed to the electrolytic cells and the zinc is deposited on sheet aluminium cathodes, and the sulphuric acid is regenerated and returned to leach further batches of ore.

The vanadium and silica in the form of a cake from the press are releached and the vanadium is again separated as a cake containing 20 per cent. of V_2O_5 (vanadium pentoxide). This cake is finally retreated for production of fused V_2O_5 free of phosphorus. The phosphorus is discarded in the form of ferric phosphate, which may be of value as a fertiliser.

The Mwanga Gold Fields, Tanganyika.

(By H. Rose Martin, A.I.M.M., M.A.I.M.E.)

It may be of interest to many readers to have some further information of the Mwanga Gold Fields. This district was, during the War, occupied by the Belgians, with the result that few South Africans were able to form any idea of its wealth. Wealthy it undoubtedly is and the surprising thing is that so very little work was done in prospecting, etc. The English prospector before the War was decidedly not invited. Most of the work done was by Germans who had Rand and Southern Rhodesian experience; another drawback was the distances over which machinery had to be transported. In one instance, a mill was bought on the Rand at £2,000 (10 Stamps complete), and the estimated cost erected of 5 stamps was £5,000. Neither in German East or British East was it possible to buy spares, etc. The position to-day is different, the Government offer every assistance to practical men and there is no doubt that mine stores, gelignite, etc., would, when prospecting in earnest is begun, be obtainable at local stores. The field is comparable to S. Rhodesia, as a field for small workers. The large mining houses have full information of these fields, but with their Rhodesian experience have not invested money there. A syndicate with 3 or 4 prospectors under an engineer, opening up small properties, would have every chance of success. To-day the one great difficulty is the matter of transport. The long journey for machinery, which must be brought from England, India or South Africa as there are no local mining machinery firms with plant and stores in stock. The long train and lake journey, re-shipping, etc., and the tsetse-fly infested areas where transport animals die, make for hardships requiring a stiff back to face and overcome. The machinery most suitable for this work is Colonial firebox multitubular boiler, engine and small tube mill, later perhaps, Nissen mills and cyanide.

During the prospecting stage of mining there is no more delightful part of Africa to live and work in. Where the climate is good, food plentiful, the shooting not comparable with any other part of Africa, it is so good, and the encouragement in being able to show gold in the pan. It is only a matter of a very short time when this district will, under the new Mandatory powers, be a producer of gold. Unfortunately it is now what it was called in 1913, " a promising but neglected gold field."

Situation of Gold Fields—Tanganyika.

There are two distinct areas, one which may be called the Sekenki area, having the well-known mine of that name as a centre and perhaps a few prospects, but which has been little prospected, particularly in a N.E. direction from Sekenki itself. The second is what is known as the Mwanga area, being an area roughly a parallelogram, having Mwanga or thereabouts as its S.W. corner. The lake as a western side and the old border of B.E.A. and G.E.A. as the northern line of the parallelogram covering an area of 200 by 100 miles. Probably to date, 5 mines have produced in this area.

Topography.

On the edge of the Lake Victoria and for roughly 20-25 miles inland are seen typical picturesque granite boulders, rocking stones, and monoliths on their bush-covered kopjes. One might be anywhere in Africa, Pietersburg, S. Rhodesia, or Lake Victoria, they are all so very much alike—kopjes, boulders, trees and grass. The altitude of Lake Victoria is 3,700 ft. and the ground gradually rises to about 4,700 ft., 100 miles to east of the lake.

After leaving the low-lying fringe of the lake, undulating and often hilly land is met with, covered with bush and with numerous plains, sometimes many square miles in extent, which are generally free of bush and where the excellent grass is fed off by countless hundreds of game of every kind, elephant excepted.

Geology.

The most important bearing on the structure of this part of Africa is the possible effect of the faulting causing the great rifts in the first place. This has also undoubtedly produced parallel lines of faulting, striking almost due N. and S. and tending to meet, if produced, the lines of the great rift faults at an angle of about 20 deg. After leaving the granite and gneisses of the lake, the country changes somewhat into a more undulating country where quartzites, slates and shales represent the old gold formations of South Africa. Here the quartz reefs carrying gold are found similar in every way to recognised gold fields in the Transvaal and Rhodesia. With this exception that when nearing the East Rift Fault district near Lake Natron, the lime deposition, evidently from the alkali water coming from these faults, has covered many reefs with a thin lime covering, making the prospector's work of recognising quartz outcrops often difficult. In some areas the granite is found so pegmatic in character as to lead one to expect mica, but the quartz veins carry gold, and in one case the pink felspar was also a gold-carrier in paying quantities. Generally speaking, gold-mining here is quartz reef mining as carried out in any other country and having the same difficulties and the gloriously encouraging, occasional rich finds. The reefs have a general strike trend of almost due north and south, and are often of surprisingly sustained lengths, average about 3 feet thick, and their average surface value are sufficient to warrant their being opened up. There is often a good deal of displacements due to surface movements and dykes are to be seen everywhere. Some of them being huge and are mostly of a very close-grained diorite of a light green colour. The miner's "white quartz blow" is often found to be extraordinary rich in gold (Sekenki is a fine white quartz, ditto one reef Kilimafeza). Copper has been found in some reefs, though perhaps it would be hardly fair to-day when so little work has been done to say that most reefs were free milling. Values of 18 dwts. to 21 dwts. (plate recovery) have been made on at least two small mines.

Mining Costs.

Actual costs on the mine are comparatively low and the initial stages should not cost more than 14s. to 20s. per ton. Hammer boys, monthly (in shillings), 15s. to 20s.; drill sharpeners, 20s.; picanins, 2s. to 5s.; gardeners, 10s. to 15s.; Indian fundi fitters and carpenters, £7 10s. to £10; local European assistants, £20 to £25.

Gelignite.

Gelignite is an expensive item costing where the mine is 100 miles from the lake as much as £6 a case; due solely to cost of carriage, etc. Food, when seasons are good, is cheap. Native flour "Unga," 10s. to 15s. per 200 lbs.; Beans, 20s.; Monkey nuts, 8s. to 10s. per 100 lbs.; Rice, 20s. per 200 lbs; fruit plentiful. In some cases natives contract to work and bring their own food at a fixed price, 15s. to 25s. monthly, which, when this can be done, is a great advantage to mine owners, who provide meat only. Meat, however, and there is plenty of it, is the great inducement to natives to come to a mine.

Water.

So little sinking has been done to date that in no district is it possible to express an opinion as to the water level. Consequently for milling purposes, dams are usually constructed, and are not satisfactory, as they are liable to be washed away by floods, often a bi-annual occurrence.

Native Labour.

Native labour is generally voluntary or arrangements are made with a native chief through the governing officer of the district. Natives from the Island of Ukerewe being particularly good workmen, and make excellent boss boys, but demand rice as a ration. Wood fuel is the only available fuel power, but there is plenty of it.

Health.

Naturally, as in other districts of Africa, as Barberton and S. Rhodesia, fever can be contracted if no care is taken. But if proper precautions are taken and swamps are sprinkled with paraffin, there are no great fears on this account. *Sleeping sickness.* The tsetse fly is very much in evidence in some parts, but no sleeping sickness has yet been reported from this area, the cattle, however are generally wiped out. Around a camp, when all bush has been removed, cattle can be kept for months. The cost of oxen is 15s. to £3 per head. Goats and sheep 2s. to 5s. each. The only food that the Europeans require to get from outside is tea, sugar, jams, fat and flour. They can obtain all else from natives locally.

How to get to these fields.

There are two ways. (1) By the central railway to Tabora, and from there 130 miles by road to Mwanza. (2) The best way, however, is by rail from Mombasa to Kisumu on lake (580 miles), then on lake Victoria Nyanza, by steamer to Musoma or Mwanza (175 miles). A Ford car will generally get over most of the Safari routes with assistance of local natives over swamps, rivers, etc. Cost: Mombasa to Mwanza, about £10. Owing to most of the travelling being done by Safari, where all luggage, etc., is carried, all packages should weigh 50 lbs. A small tent and mosquito net are very necessary.

Phone 187 **P.O. Box 22**

Standard Brass Foundry, Ltd.,
BENONI.

Iron and Brass Founders and
:: General Engineers. ::

Specialists in Impellers for every type of Centrifugal Pump.
Turbo Water Wheel Makers.
Makers of the well-known Standard Acid Resisting Metal

Bronze Castings up to 3 tons. Iron Castings up to 6 tons

HADFIELDS, Ltd.

Workmen Employed during the War over 15,000.

East Hecla & Hecla Works, Sheffield, England.

WORKS AREA OVER 200 ACRES.

SOLE MAKERS OF

Hadfield's Patent ERA Manganese Steel,

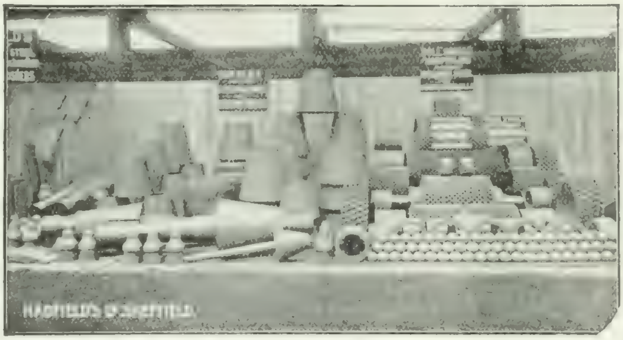
THE SUPREME MATERIAL

For the Wearing Parts of Crushing and Grinding Machinery, etc.

HECLA

MANUFACTURERS OF Steel Forgings in the rough, rough machined, or finished for Marine and other Engineering purposes of any analysis and to pass any required test.

Steel Castings of every description up to 30 tons in weight.



Group of Wearing Parts for Stone Breaking and Ore Crushing Machinery.

Mining Requisites of every description, including Steel Wheels and Axles, Haulage Rollers and Frames, Angle Pulleys and Frames, Pedestals, Rope Clips, Shoes and Dies, Balls for Ball and Tube Mills, Grizzley Bars, Crushing Rolls, etc.

Makers of the best kinds of

STONE BREAKING & ORE CRUSHING PLANTS

INCLUDING

GYRATORY JAW AND DISC CRUSHERS.

Head Office for South Africa:

46 & 47, Cullinan Buildings, JOHANNESBURG.

'Phone 5900. Tel. Add.: "HECLA." Box 1009.

STORES DENVER, TRANSVAAL (Adjoining Denver Station).

Bulawayo Agents:
WHITMORE & JACKSON,
17 & 18, Agency Chambers.

Natal Agents:
THOS. BARLOW & SONS (S.A.), LTD.,
Smith Street, Durban.

The South African Market for Mine Supplies.

"F.B.I." COMMISSIONER REVIEWS THE OUTLOOK AND CONDITIONS ON THE RAND.

From the exhaustive report lately completed by the "F.B.I." Special Commissioner, Mr. C. W. Francis Harrison, we take the following review of the market for mine supplies provided by South Africa.

America is anxious to increase her proportion of the business of the mines. American capital has been put into development work; further, it has to be remembered that a number of principal officials and engineers on the mines are Americans. The U.S.A. is a competitor in the Drill Steel trade and has supplied a fair quantity of the Hollow Steel. Sweden is also a competitor, but Sheffield with its superior quality, should be able to hold its own. Our solid steel commands the market.

Wire Ropes.

There is little to fear from America in Wire Ropes, except in case of any important margin of price. The British standard of quality and reliability is unapproachable. There is, however, a local factory, established about a year ago, and since that time, it has been steadily competing against the British Wire Rope Manufacturers. To-day it is an important factor in the supply of wire ropes, inasmuch as about 60 per cent. of the ropes used for mechanical haulage are supplied by this local factory, and about 25 per cent. of the winding ropes.

The British manufacturers have recently notified their agents that South Africa and Rhodesia have been declared a free market. This should have the effect of enabling the British makers to regain some portion of the business. In Pumps, Rock Drills and Tools, America is "well in." Likewise in Belting. In electrical machinery also, but it is satisfactory to note that British firms are regaining the ground which was lost during and since the war. Canada has done a pretty extensive business in Shovels, at a figure a good deal below English quotations, but British shovels are now re-capturing the markets. America is able to quote for wheel-barrows much under the United Kingdom. The Steel Plate trade is British.

Standardisation.

The Chamber of Mines Standardisation Committee has standardised the following mining supplies: Mill spares, which include shoes and dies, cams, cam shafts, heads, tappetts, stems, screening (coarse, medium and fine), grisly bars for tube mills and stone crushers, and also the following: Skip wheels, truck wheels, rails and fish plates, anti-friction metals, screwed and socketed piping, electric lamps, conveyor-belting, wire ropes, bolts and nuts, oils and grease. The majority of the mines are now buying on these standard specifications.

Shoes and Dies.

Of Shoes and Dies, Germany had 50 per cent. of the trade before the war, but this has largely gone to Great Britain; some portion to the U.S.A. Two local factories commenced the manufacture of shoes and dies. The quality did not come up to the standard of the imported article, and in consequence the bulk of shoes and dies required is now supplied by importation from Great Britain. Mill Screening is mostly in British hands. Since the introduction of tube mills, the screening used has been getting coarser every year, and to-day the bulk of the screening is manufactured locally from imported wire. The medium and fine screening is supplied, approximately 50 per cent. by the United States and 50 per cent. by Great Britain.

Local Competition.

In the matter of Local Competition in various directions, such as spares, rails, tubular bars, shoes and dies and other articles given in the paragraph headed "Local Industries"—the opinion is that under present more competitive conditions there is no very great fear of South African products taking the place of those from oversea. But in such articles as rails, up to and including the 30 lb. section, ordinary merchant bar iron, mild steel bars, tube mills and grisly bars, these are chiefly being supplied by South African firms, the most important of which is the Union Steel Corporation. There is little doubt that they will continue to hold this business, as the quality of the material turned out compares quite favourably with the imported articles, and prices are below the cost of importation. In view of the keen competition, it is essential that manufacturers of mining machinery and mining hardware (covering a wide range of products in every-day use on the mines) should have the services in Johannesburg of an agent or firm having established connections with the leading mine engineers and group buyers. It is very desirable that every possible effort should be made to meet the wishes of prospective purchasers in respect to design or in any other way that will not involve departure from such standardised types or sizes of mine requirements—tools and appliances generally—as have been found most useful and acceptable. The needs of this market are deserving of most careful study.

The Witwatersrand Gold Mines.

With the collapse of the Revolution, the aggressive elements in the various trade unions have had a severe setback, and judging the position to-day it looks as if a great many of the low-grade mines will be able to continue working. It must, however, be borne in mind that it will be a long time before working costs can be reduced very materially. It is anticipated that they will come down by about 2s. to 3s. almost immediately, due to the reorganisation of the labour force, but there is a very heavy burden on the industry in the matter of taxation on account of phthisis, which burden has been imposed during the last few years. The phthisis tax amounts approximately to 4s. per shift. Until some relief is obtained in this direction, it is practically impossible to expect working costs to reach the pre-war level. The general outlook for the gold mining industry is better to-day than it has been for a very long time. It is not expected that the colour bar will be removed, but with the recent settlement of the Strike, there is undoubtedly a feeling of optimism, and, of course, there are three further Government areas ready to be put up to tender as soon as financial conditions are more favourable. It is generally felt that the whole basis of the industry has been broadened by recent events.

In connection with the supply of mining machinery and equipment, I mentioned in my last report that three factors have operated against more extensive business being done with Great Britain during the last few years, namely, the difficulty of getting supplies from manufacturers; high prices; and aggressive American competition. It is satisfactory to be able to record that Great Britain is giving much better deliveries, the prices have fallen very considerably, and the severe German competition which was apparent some months back, now appears to be disappearing to a great extent. Although America is still competing actively, the manufacturers of Great Britain can, generally speaking, hold their own in this competition.

There is one particular question I should again touch upon. The Mining Houses feel very strongly that they are paying away too much in commissions, seeing that by reason of the setting up of certain Price Associations in Great Bri-

[illegible] are in favour of the adoption of competitive quotations. The Mines claim that under these conditions there [illegible] for restricting the same number of representatives or collecting firms, that the number of agencies should be greatly reduced; that it should be possible for the business to be done at, say, 5 per cent. instead of 12½ per cent. to 15 per cent., which they are now called upon to pay, thus effecting a saving of anything from £100,000 to £150,000 a year.

The Mines are undoubtedly justified in endeavouring to find a way of reducing expenditure, and in expecting to pay a lesser commission when orders are concentrated in fewer hands. On the other side, a number of the agents are naturally concerned as to their position and future livelihood, and there is always a danger that drastic action might result in an important portion of the trade being diverted to foreign firms. I made the recommendation some time ago that it would be well for the Groups or Associations concerned to appoint a representative or representatives to visit South Africa for the purpose of getting into touch with all parties, and essaying to find an acceptable solution of the difficulty.

Reviews.

Prospector's Field Book and Guide.

We have received a copy of the ninth revised edition of this excellent work. The ninth edition has been thoroughly adapted to the present time. While the old-time prospector will always be an important factor, the knowledge of and search for the common and rarer minerals is bringing out men who are trained to some degree. In the field they need a handy and suggestive pocket-book containing hints on prospecting—where to search and how to test—couched in simple terms. The mining world learned a great deal during the past five years, more in some branches than ever before, and this knowledge will be valuable for all times. It is all incorporated in the new book. Some idea of the scope of the ninth edition may be gained from the fact that a spirited introduction emphasises the necessity of prospectors receiving some technical training. The chapter on preliminary instruction covers the fundamentals of a study of the earth's crust. Then follow discussions on practical mineralogy, crystallography, the value of the blowpipe in prospecting, surveying, and chemical tests in the field. Separate chapters are given to the precious and base metals, also to the non-metallic minerals. A general re-arrangement has been made, and the metals or minerals found in association are considered together. The chapter on the non-ferrous or alloy group of minerals is entirely new, being the best information available. The section on oil has been expanded, while the subject of oil-shale is new. A new and little known, yet successful method of prospecting for gold is included, while surficial indications for copper receive full attention. The chapter on gems in the previous edition has been re-written and condensed on that subject, but to it has been added matter concerning gemstones used for industrial purposes, such as abrasives. A general chapter covers many useful minerals and salts, the old matter being amplified and brought up to date. An important guide and suggestive aid throughout the new book are the many brief descriptions of ore deposits of all minerals occurring in scattered parts of the world. These have been abstracted carefully, and tell how certain minerals may be expected to be found. No other prospector's book contains this class of information. Another special feature is the lists of outfits, prices, and manipulation of the apparatus. In the appendix will be found numbers of useful tables, an explanation of the unit system of buying and selling ores, and a complete glossary of mining and mineralogical terms. The work is published at $3 by Messrs. H. C. Baird & Co., Ltd., 2 West Forty-fifth Street, New York.

South African Geology.

DR. MOLENGRAAFF'S VIEWS.

RECORD OF RECENT TOUR.

"Always something new out of Africa. It is true, geologically speaking, of South Africa, as well as in other respects, and I must say this country is a very fortunate one also from the standpoint of geology. It has given us treasures of knowledge. Botanically speaking, too, this country is remarkable."

These were some of the views expressed by Prof. Dr. Molengraaff—who was the leader of the American geological expedition which recently visited South Africa, and who is returning to Holland shortly—at Capetown a few days ago, when he gave a popular address on some of the principal features of the geology of South Africa.

He stated that many of the geological profiles of South Africa had become famous throughout the world. Table Mountain was not only very beautiful from the scenic point of view, but was also extraordinarily interesting geologically.

He drew a profile of the mountain on a blackboard, and lucidly explained how the rock formation was thought to have been brought about. They could, he said, all see the Table Mountain sandstone which was on top, but underneath there were the Malmesbury beds, on the left facing the mountain, and the granite on the right and extending in the Sea Point direction, the latter having forced up the former.

An Interesting Study.

The mass, it was supposed, had been equalised on its surface by the action of the sea, and the sandstone was later on superimposed. Sea Point was also a most interesting place for the geological student, and it gave one an excellent idea of how the rock must have been formed.

South Africa, in fact, belonged to a very old period, geologically speaking, and therefore presented such an extremely interesting field of study. Prof. Molengraaff went on to deal with the typical "Koppen" in the Karoo, and showed how, in all probability, they had been formed through the action of wind and rain. Lion's Head was once a part of Table Mountain, and he predicted—although they would not live to see it—that one day it would be worn away altogether. Geologists spoke of thousands, aye, millions of years as if they were nothing.

In the second part of his lecture Prof. Molengraaff dealt more particularly with the Transvaal, where the expedition had done most of its work.

Great Mineral Wealth.

He spoke of the peculiar rock formation in the Bushveld, and of the tremendous stores of mineral wealth there must be, such as magnetic iron ore and tin. He showed how the traces which had been left proved that there must have been a huge glacier at one time where Vryheid now is, and how the study of the geology of South Africa had caused them to modify some of their older theories of the temperature of the world at a much earlier stage of its history.

He touched on soil erosion and on the rise of continents; and in conclusion showed by means of diagrams how the diamond pipes at Kimberley and elsewhere in South Africa were considered to be those that led to the craters of volcanoes which had long been worn away, and that the stone known as Kimberlite had been forced up from the interior of the earth by means of a tremendous pressure of gas, carrying the diamonds with it.

Notes from the Natal Coal Fields.

CENTRAL RESCUE STATIONS—NATAL NAVIGATION AND HLOBANE—ENYATI'S TOP SEAM—POSITION AT VREDE.

(From our Special Commissioner on the Natal Coal Fields).

The Government Department of Mines has recently decided that with a view to ensuring the safe working of the Natal Collieries, additional safety measures shall be introduced. The methods to be adopted now form the subject of discussion between the Collieries and the Mines Department, but it is considered probable that as a result of these negotiations two central rescue stations with training galleries, will be established. One of these, so I understand, will be located at Hatting Spruit and the other at Hlobane.

* * *

The proposed basis for absorption of the Hlobane Colliery (Vryheid Coal and Iron Company) by the Natal Navigation Collieries is a payment of 17s. 6d. per share to Hlobane shareholders, which will be as to 4s. 2d. per share in cash and 13s. 4d. in Natal Navigation shares taking the price of these latter shares at 30s. 2d. each. The Natal Navigation Company has for some years past adopted a prudent policy of accumulating large cash resources, and of making ample provision for the future prosperity of this soundly-managed concern. Some little time ago the company, in consequence of its foresight and strong financial position, was able to float off a prosperous subsidiary—the Northern Natal Navigation—at Paul Pietersburg, which is now producing over 25,000 tons per month, and more recently it has absorbed the Glencoe Colliery, and has also opened up and equipped two new pits known as the Nos. 4 and 5 to the east of the old workings. By the absorption of Hlobane the company will attain to an even stronger position than it at present enjoys in the South African coal industry, and should the Kosi or Sordwana Bay projects go through, the Natal Navigation group of interests will have two collieries of large productive capacity in the vicinity of the projected new line to the Zululand coasts as well as its valuable collieries near Hatting Spruit, on the old Natal main line.

Enyati Colliery: Screening and Loading Plant.

* * *

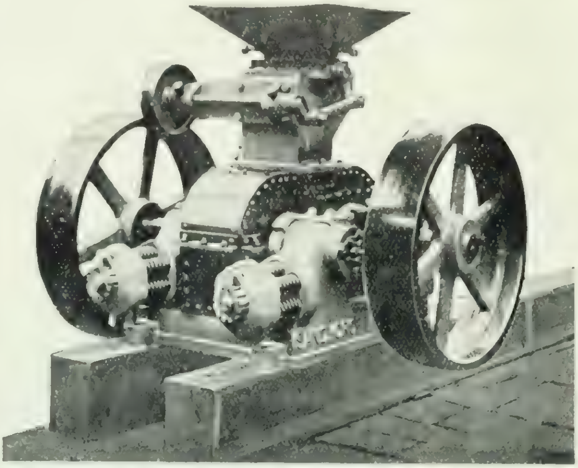
The Enyati Colliery management is now undertaking extensive development of its top seam, which is disclosing exceptionally good and consistent values. The Enyati, which is certainly one of the most remarkably favoured collieries in the world is now looking better than ever, and is in a position to produce almost illimitable quantities of as good grade coal as has ever been won from any pit in South Africa.

* * *

Constructional work at Vrede of the Transvaal and Natal Collieries is now well advanced, and the new manager, Mr. Cashmore, has brought the production up to a present output of close on 150,000 tons per annum. In the near future, the company will be in a position to handle a very much larger output. The lay out of this property makes for effective and economical working in regard to drawing coal from both the Vrede and Waterval adits.

SANDYCROFT, LTD.
(INCORPORATED IN GREAT BRITAIN)
CHESTER AND LONDON.
On British Admiralty List.

49, STELLA BUILDINGS (cor. Rissik & Main Streets),
JOHANNESBURG.



MANUFACTURERS OF

CONVEYOR PLANTS,
TROMMELS,
ROSS BAR SCREENS,
STONE BREAKERS,
STAMP MILLS,
SYMONS' DISC CRUSHER,
ROLLS,
BALL MILLS,
TUBE MILLS,
DEISTER TABLES,
CLASSIFIERS,
DORR EQUIPMENTS,
SHOES & DIES,
MILL PARTS, Etc.

COMPLETE CRUSHING AND ORE TREATMENT PLANTS,
SHAFT EQUIPMENTS, QUARRY PLANTS, Etc.

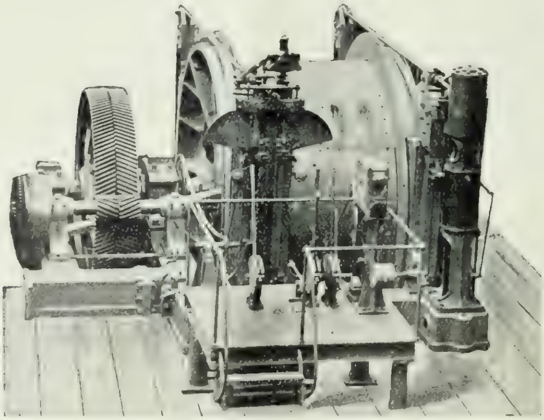
VERTICAL AIR COMPRESSORS,

WINDING ENGINES, Steam or Electrically Operated.

HOISTS, Steam, Air or Electrically Operated.

HAULAGES,

PUMPS, Etc.



POWER PLANTS, ELECTRIC MOTORS, CONTROLLERS and SWITCHES, VERTICAL and PORTABLE BOILERS and STEAM ENGINES, GAS and OIL ENGINES, MINE SUPPLIES.

The New Industrial Conciliation Boards.

DETAILED AGREEMENT REGARDING NEW CONCILIATION MACHINERY FOR GOLD, COAL AND POWER INDUSTRIES.

The following are the details of the new conciliation scheme finally agreed to this week for the gold, coal and power industries. Three separate boards will deal with the three industries.

The following basis of conciliation machinery for the European employees of the gold mines, members of the Transvaal Chamber of Mines, will come into force as at October 1st, 1922.

NOTE.—The undernoted arrangements have been come to on the assumption that, while they remain in force, neither employers nor employees shall avail themselves of the corresponding provisions of the Transvaal Industrial Disputes Prevention Act (No. 20 of 1909).

Section A.—General.

(1) Without prejudice to any negotiations between the trade unions and the Gold Producers' Committee of the Chamber in connection with the definition of an official, the provisions of this memorandum shall not apply to the following employees when such are appointed, nor to any employee in each department whose official status is higher than that of any employee of the same department who is specified hereunder:

Engineering Department.—Sectional, underground and assistant engineers, electrical engineers or chief electricians, foremen on 30 days' notice (inside, outside, and underground).

Reduction Works.—Mill and cyanide managers, foremen in reduction works, shift bosses in reduction works, shift leaders, chief smelters.

Underground.—Mine overseers, shift bosses, dust inspectors, foremen on 30 days' notice.

General.—Hospital and compound employees (surface or underground). All employees on secretarial, clerical and storekeeping work, assaying (including chemists), surveying, draughting, sampling, policing and caretaking.

(2) It is a condition of the setting up of the undernoted machinery that no strike or lock-out shall take place until the procedure laid down herein has been completely carried out in regard to the point in dispute.

(3) Nothing in the procedure set out hereunder is to be considered as in any way compelling employees to join trade unions. An employee is at liberty to become a member of a trade union or not, as he thinks fit.

(4) Where a whole-time trade union official is temporarily absent from the Witwatersrand, or is otherwise unable to carry out his ordinary duties, and a whole-time substitute for him is appointed, such substitute shall be entitled to take the place of the said official for the purposes of this memorandum. In the event of the said appointment as substitute not being a whole-time appointment—the substitute being required to carry on his ordinary work in addition to acting as substitute—the individual appointed shall be an employee of the gold mines.

(5) Any dispute in regard to the interpretation of this memorandum may be referred to a conciliation board under the conciliation board procedure provided in the memorandum.

(6) The undernoted conciliation machinery is subject to modification at any time by the conciliation board mentioned in Section D hereof. It is further subject to termination on six months' notice by the employers' representatives or the employees' representatives on the said conciliation board.

Section B.—Procedure in Regard to Matters Affecting Individual Mines.

(7) Wherever under the following arrangements a trade union official is present at a discussion, an official of the employers' organisation may also attend, if the mining company concerned desires it.

(8) Employees who are not members of trade unions shall have exactly the same rights in placing their complaints before the management and the Board of Directors as are enjoyed by employees who are members of trade unions.

(9) Where an alteration of any substance in recognised working conditions on a mine is contemplated, such alteration shall not take effect until 30 days' notice has been given by posting on the official notice boards on the mine of the intention to bring it about. If the alteration proposed is one to apply generally throughout the Witwatersrand, the said notice shall also be given through the two principal Johannesburg newspapers and to the trade unions concerned.

Appeal to Manager.

(10) Where an employee desires to make a complaint he shall, in the first instance, lay it before the official immediately concerned; subsequently, if satisfaction is not obtained, he may lay it before the mine manager. Any matter complained of must be placed before the official concerned by the complainant within three days of it arising. The complainant may only make representations in regard to a matter applying directly to him.

(11) If, after the employee has laid his complaint before the manager, no agreement is arrived at, the employee may again interview the manager, bringing with him, if he so desires, a whole-time official of the trade union, if any, of which he is a member.

(12) If an agreement is still not reached, the said trade union official may again interview the manager, the employee concerned in the dispute not being present at this interview.

(13) All reasonable facilities shall be given to employees to place their complaints before the officials and manager, but unless otherwise arranged by the management, all interviews under the above clauses Nos. (10) to (12) shall take place outside of working hours.

(14) Where a number of employees are directly concerned they may appoint a deputation from amongst their number to represent them, the procedure to be followed thereafter to be the same as in the case of an individual workman. The deputation shall not exceed five in number.

(15) Nothing in this memorandum shall require the manager to discuss with any third party questions in regard to the fixing of an individual contract or the engagement, suspension, discharge, promotion, or derating of an employee. On these matters the manager's decision shall be final.

Provided, however, that for a period of six months after the coming into force of the provisions of this memorandum, if a whole-time trade union official nominated by the complaining employee desires an interview with the manager in order to place before him a complaint in connection with any of these matters, the manager shall grant such interview under the procedure laid down in the preceding clauses, but his decision on the complaint shall be final. This arrangement in regard to a whole-time trade union official interviewing the manager on these matters may continue after the expiry of the period of six months by mutual agreement between the Gold Producers' Committee and any trade union which desires the continuance of this arrangement in respect of that union, and, failing agreement, the continuance of the arrangement may be referred to a conciliation board under the conciliation board procedure laid down in this memorandum.

Appeal to Board of Directors.

(16) Where a dispute between a mine manager and a body of employees consisting of all the employees of a particular class on the mine, or numbering more than ten employees, has arisen on a matter (not being a matter referred to in clause [illegible]) directly affecting such employees that has not been settled although the procedure laid down in the preceding clauses of this section has been carried out, the said employees may ask by letter to the mine manager that the matter shall come before the Board of Directors of the company. In that event a meeting shall take place within a week of the request being received between the employees concerned, accompanied if they so desire by their whole-time trade union representatives, and the Board of Directors of the company and such other individuals as the Board of Directors may invite, at which the matter in dispute shall be discussed. Not more than seven persons on either side shall attend the meeting. Where the head office of the company is abroad, the Transvaal representatives of the company will take the place of the Board of Directors for the purpose of this clause.

(17) In the event of no agreement being arrived at within a fortnight of the date of such meeting, the company and the employees concerned shall immediately advise the Inspector of White Labour, Johannesburg, and either party, or the Minister of Mines acting through the Department of White Labour, may apply within 21 days of the date of such meeting for the calling together of a conciliation board under the procedure proposed in Section D of this memorandum.

Section C.—Procedure in Regard to Matters Affecting the Industry Generally.

(18) Points of collective bargaining in regard to wages, hours, and other conditions of employment of any class of workman employed by the industry generally, raised by a trade union representing those employees or by the Gold Producers' Committee, shall be discussed between the said trade union and the Gold Producers' Committee.

(19) Where more than one class of employee is concerned, or where only one class is concerned and more than one trade union represents that class, it shall be competent for any of the unions so concerned who agree to do so jointly to meet the Gold Producers' Committee.

(20) In the event of no agreement being arrived at within a fortnight of the date of such meeting, the Gold Producers' Committee and the trade union shall immediately advise the Inspector of White Labour, Johannesburg, and either party, or the Minister of Mines acting through the Department of White Labour, may apply within 21 days of the date of such meeting for the calling together of a conciliation board under the procedure proposed in Section D of this memorandum.

(21) Any complaint that an agreement between a trade union and the Gold Producers' Committee is not being carried out which has not been settled under the procedure laid down in Section B hereof shall be referred to a meeting between the said trade union and the Gold Producers' Committee. If no agreement is arrived at within a fortnight of the date of such meeting, the Gold Producers' Committee and the trade union shall immediately advise the Inspector of White Labour, Johannesburg, and either party, or the Minister of Mines acting through the Department of White Labour, may apply within 21 days of the date of such meeting for the calling together of a conciliation board under the procedure proposed in Section D of this memorandum.

(22) The representatives at meetings under this section shall be persons who are employed by the gold mining industry or by the Chamber of Mines, or are whole-time officials of the union or unions concerned.

(23) The maximum number of representatives at meetings under this section shall be nine on either side. No other persons shall be present at such meetings unless mutually agreed to the contrary.

Section D.—Conciliation Board.

(24) There shall be established for the Witwatersrand gold mines, members of the Transvaal Chamber of Mines, a Standing Conciliation Board to deal with matters which may be referred to a conciliation board under this memorandum, and any dispute which it is mutually agreed shall be dealt with by the Conciliation Board.

(25) The board shall consist of 12 members, six of whom shall be appointed by the Gold Producers' Committee of the Chamber and six elected by the employees of the said mines on the following basis:

Two to be elected by the underground workers (other than skilled mechanics and engine-drivers).

One to be elected by the skilled mechanics.

One to be elected by the engine-drivers and firemen.

One to be elected by the reduction workers.

One to be elected by the other surface workers

(26) Except as provided in Clause (30) and in this clause, members of the board shall be appointed for two years, but of the first-elected board three members on each side (decided by agreement, or failing agreement, by lot) shall hold office for two years, and the remaining three members on each side for one year; thereafter all members shall be appointed for two years. Retiring members shall be eligible for re-election.

(27) For every member of the board there shall be one alternate member, appointed or elected, as the case may be, at the same time and subject to the same conditions as the substantive member. The candidate who obtains the highest number of votes shall be the elected member of the board, the candidate who obtains the next highest number of votes shall be the alternate member. The alternate member may act for the substantive member at any time, provided the latter agrees.

(28) Elections for the appointment of the employees representatives shall be conducted by the Inspector of White Labour, Johannesburg, by a secret ballot on lines to be laid down by him; but only men actually employed by the mines at the date of the election or men who, although out of work at that date, were last employed on the mines within eight weeks before such date, shall be entitled to vote.

(29) Except as provided in Clause (31) only persons who at the date of the election are employed by the gold mining industry or by the Chamber of Mines or are whole-time trade union officials shall be eligible for election to the board either as members or alternates.

(30) The Mining Industry Board shall appoint the members and alternate members of the first Conciliation Board, who shall hold office for twelve months.

(31) Any casual vacancy on the board shall be filled within one month of it arising. If the vacancy is in the employers' representation, it shall be filled by the Gold Producers' Committee. If in the employees' representation, it shall be filled by the appointment of the alternate to the member who has fallen out. The place of any employees' alternate who falls out shall be taken by the candidate who next to the said alternate secured the highest number of votes in the same class at the last election and is still eligible for appointment. If no such individual is available, then the vacancy in the position of alternate shall be filled by an appointment made by the other employees' members of the board. Vacancies amongst the employers' alternates shall be filled by the Gold Producers' Committee. Alternates appointed under this clause shall be persons who at the time of their appointment are either employed by the gold mining industry or by the Chamber of Mines, or are whole-time trade union officials.

(32) For the first six months of the board's existence, one of the representatives of the Gold Producers' Committee shall be chairman of the board, and one of the representatives of the employees vice-chairman. For the second six months

one of the representatives of the employees shall be chairman, and one of the representatives of the Gold Producers' Committee vice-chairman. The same procedure shall be adopted in subsequent years.

(33) For each dispute the board shall agree upon an independent referee whose duties shall be as hereinafter described. Should it be found impossible to agree upon an individual, then the selection shall be made by the Chief Justice of the Union of South Africa.

(34) In the event of the board being unable to arrive at an agreement on any matter referred to it within a fortnight of its first meeting to consider that matter (unless an extension of this period is mutually agreed to), the independent referee shall be called in. The matter in dispute shall then again be discussed, with the independent referee in the chair, and the referee shall report upon it as soon as possible. His report (together with the report or reports of the board if available) shall be published by the board in the two principal Johannesburg newspapers, and in at least one other Transvaal newspaper within a week of its presentation. It will be in no way binding upon either side, but no action in the way of a strike or lock-out may take place on the point at issue until 14 days after the publication of the report.

(35) Subject to the consent of the Minister of Mines, the Inspector of White Labour, Johannesburg, shall provide the necessary secretarial and clerical assistance in connection with the board.

(36) Meetings shall be called by the secretary of the board, in consultation with the chairman and vice-chairman.

(37) Application for the holding of a board shall be made to the secretary, care of the Inspector of White Labour, Johannesburg.

(38) The application shall state the matter which it is desired to put to the board, and subject to it being one that may be referred to a conciliation board under this memorandum the secretary shall convene a meeting of the board for a date not later than one week after the date on which the application is received by him.

(39) The board shall draw up its own standing orders, not inconsistent with this memorandum.

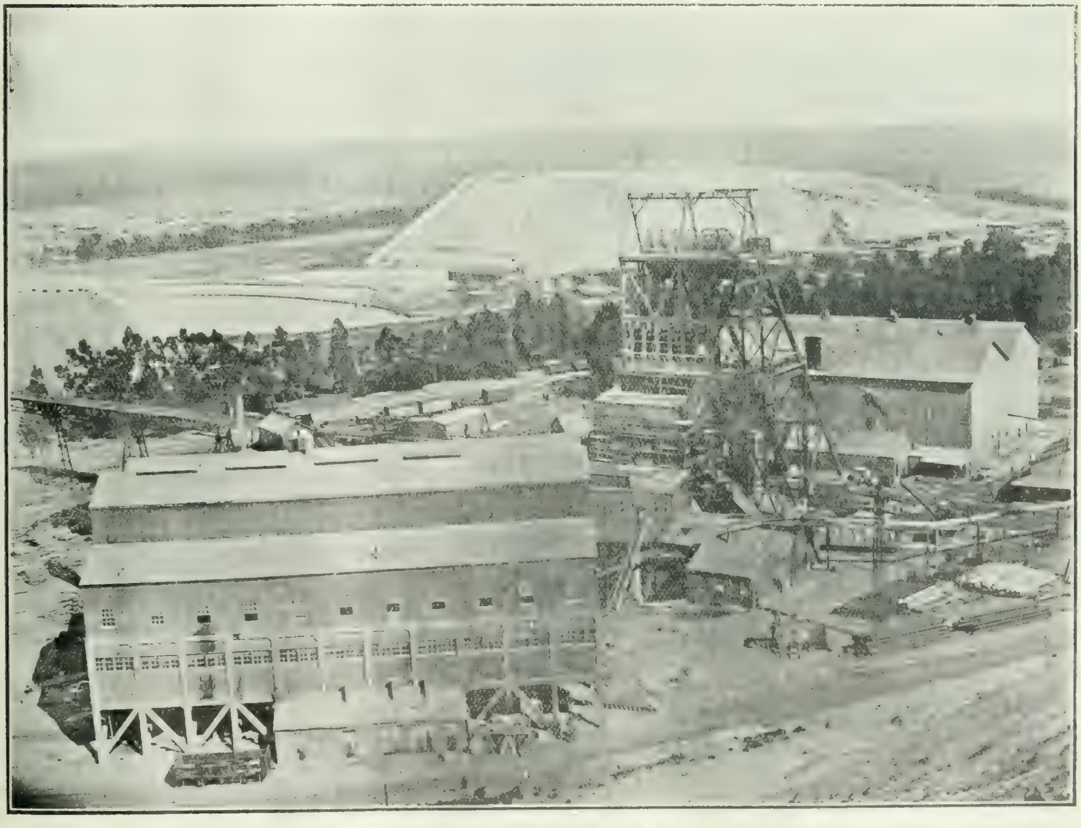
(40) The expenses of the board shall be borne by the Government.

Note.—For the time being it is a condition of the acceptance of this memorandum by the Gold Producers' Committee that the term "trade union" as used therein means a trade union recognised by the committee. The committee also wishes to make it clear that shop and shaft stewards, works and/or grievance committees, are not recognised by the gold mining industry.

Crown Diamonds.

The Stock Exchange have granted an official quotation as from Monday last, the 21st inst., for the new 5s. shares of Crown Diamonds in place of the old £1 shares which are at present quoted. Holders of the £1 shares can convert their holdings on the basis of four new 5s. shares for every three £1 shares. The box office address of the company is P.O. Box 2567, and not as incorrectly stated in the advertisement in our last issue.

IMPROVED OUTLOOK FOR THE CROWN MINES.



Interest is again being manifested in the future of Crown Mines, owing to reduced costs, better development and improved profits.

Goodrich
"Longlife"
Conveyor Belts

Stocks Due in
a Few Days.

JUST as Goodrich Air Hose withstands the most gruelling tests of hard usage, so Goodrich "Longlife" Belts render satisfaction for their unique service-giving qualities.

Far sighted mining men will specify "Longlife" for their heaviest service as an insurance against shutdowns, with their consequent loss of time, money and patience.

That's the belt for your plant—"Longlife."

J. H. Vivian & Co.
MINING MATERIAL MERCHANTS

Telegrams: "VIVIANCO"
Phone - - - - 6630
P.O. Box - - - 301

GENERAL MINING BUILDINGS

MAIN STREET
Johannesburg

"HUMBLE" SAFETY
DETACHING HOOK

SOLE AGENTS:

GEO. CRADOCK
—AND CO. (S.A.), LTD.—
75-77, CULLINAN BUILDINGS.

P.O. Box 316. Telephone 539.
Tel. Add.: "ROPES."
JOHANNESBURG.

ROBINS
CONVEYING BELT COMPANY
NEW YORK
Engineers, Founders, Machinists

Design, Manufacture, and Erection of
BELT CONVEYORS
BUCKET ELEVATORS
COAL, COKE, AND ORE SCREENS
COAL AND COKE CRUSHERS
CAR DUMPERS
COAL AND ORE BRIDGE CRANES
ORE-BEDDING SYSTEMS
SHIP LOADING AND UNLOADING TOWERS
COAL AND ASH HANDLING EQUIPMENT FOR POWER PLANTS
COAL HANDLING AND SCREENING EQUIPMENT FOR COLLIERIES
AND MANY OTHER TYPES OF MATERIAL-HANDLING EQUIPMENT.

Branch for South Africa:
Robins Conveyors (S.A.), Ltd.,
P.O. Box 4736, 'Phone 4182, JOHANNESBURG.
P.O. Box 811, 'Phone 3383, DURBAN.

The South African Mining and Engineering Journal.

HEAD OFFICE: 176-180 Stock Exchange Buildings (2nd Floor), Fox Street, JOHANNESBURG, Union of South Africa.

Telephone **913**. P.O. Boxes **963** and **4578**.

Cables and Telegraphic Address: "MINING JOURNAL."

ANNUAL SUBSCRIPTION RATES: Oversea, £2; Union of South Africa and Rhodesia, £1 10s.; Local Delivery (Town only), £1 6s., payable in advance.

AGENTS FOR GREAT BRITAIN AND AMERICA: Argus South African Newspapers, Ltd., Byron House, 82-85, Fleet Street, London, E.C. 4.

Copies of this Journal are obtainable at all Branches and Agencies of the Central News Agency, Ltd., at all News Agents and Railway Bookstalls throughout South Africa, and at the London Agency as above.

CONTENTS. PAGE.

Dormant Mines of the Rand. II. Daggafontein ... 1705
The Year with Vereeniging Estates ... 1707
Engineering and Metallurgical Methods at Rhodesia Broken Hill ... 1708
The Mwanga Gold Fields, Tanganyika ... 1708
The South African Market for Mine Supplies ... 1711
South African Geology ... 1712
Notes from the Natal Coal Fields ... 1713
The New Industrial Conciliation Boards ... 1715
Topics of the Week ... 1719
Share Market ... 1723
Rhodesia Section:
  What Rhodesian Mines Buy ... 1725
  Small Mines Progress ... 1725
Engineering Section:
  The Treatment of Mine Timber ... 1727
The Development of the Kasai Diamond Fields ... 1729
The Cyanide Process: III. ... 1730
Trades and Industries Section:
  The Week in the Mining Material and Engineering Trades ... 1733
Company Meetings:
  Vereeniging Estates ... 1736

TOPICS OF THE WEEK.

The Conciliation Boards.

The Mining Industry Board has brought the first stage of its labours to a successful conclusion by the establishment of three conciliation boards. The more difficult portion of the work of the Mining Industry Board—more difficult, that is, than the hearing of evidence—is the preparation of its report, which still remains to be done. But the work accomplished this week in the direction of creating conciliation boards for the gold, coal and power supply industries to a large extent lessens the urgency for the report of the Board, and smooths the way for the rehabilitation of industry. No apology is needed for putting on record the full text of the agreement arrived at, which will be found in another part of this issue. The surprising thing is that a document of such complexity and covering so wide a field has been found so readily acceptable by all parties, subject to the confirmation of the members of the unions concerned; and the Mining Industry Board can certainly congratulate itself on the result. It will doubtless be argued that the employers seem to be too ready to forget the lessons of the recent strike and too prone to forgive the trade unions for their conduct on that occasion. It may also be objected that boards of all kinds, and they differ very little whether called boards of reference or of conciliation, have proved themselves mere promoters of trouble in the past, and that the new machinery in the hands of unscrupulous labour leaders—and there is no guarantee that however honest the present leaders may be, they may not be succeeded by others less trustworthy—may not be used to extract undeserved concessions. To some extent, of course, these contingencies have been provided against in the new agreement. The chief consideration, however, is the absolute necessity for some such machinery as has now been set up. Had it not been brought into being now, it would have had to be evolved sooner or later, and it is better that it should have come sooner rather than later. The employers in the coal industry, and more particularly in the power supply industry, have shown themselves rather reluctant to follow the gold industry in this new step, and there is a great deal to be said in support of their point of view. In the end, however, they have come into line, and we can only hope that their fears will, in practice, prove unfounded. The final result will doubtless be to bring about an increased spirit of co-operation and contentment, which all are agreed is essential for the progress of the great industries affected.

A Diamond Revival.

The firmness in De Beers this week in face of the weakness in the Paris market and the other uncertain factors has revived hopes of an early improvement in the diamond market. The settlement of the strikes on the coal mines and railways of the United States has, of course, greatly improved the outlook for the sale of diamonds, and is doubtless the immediate cause of the improvement. But it must also be remembered that most of those intimately concerned with the sale of diamonds have expressed the view that the end of this year or the beginning of next would bring a revival. This view was endorsed by the Minister of Finance, Mr. Burton, in his Budget speech in the Assembly, and he would hardly have committed himself to that forecast without consulting the best available authorities. By this time it is hoped that Russian supplies of cut stones may have been absorbed, and the world demand for stones must be steadily catching up on the supply. As the diamond industry means so much to the trade and general prosperity of the country, we can only hope that the market interest in De Beers and other shares in diamond companies means the beginning of better days for the industry.

Minerals Separation and South African Ores.

Metallurgists will be interested in the references to the treatment of South African gold and other ores in the latest statement from the Minerals Separation people. In his recent speech at the annual meeting, the Chairman said: "The progress made in connection with the use of our processes by the gold mining companies on the Rand has been slower than was anticipated; but progress is being made, and the problem of gold ore treatment generally is being studied systematically by our technical staff. At the Cam and Motor mine, with the installation of our processes, excellent results continue to be obtained. The plant we have erected at the mine of the Transvaal Silver and Base Metals, Ltd., has commenced operations, and is working satisfactorily. At the Sheba Gold Mines a plant has also been erected, and one of our engineers is there to commence operations. In West Africa the Prestea Block A Company, which has just made a further issue of capital, has signed our licence and will erect one of our plants. We have obtained in London good results by our treatment of these ores, and we have been appointed consulting metallurgists to the company, and can therefore watch very closely the working of our plant on that property, which, being a gold proposition, will afford us much information. We took part in raising the additional capital on terms which were quite satisfactory to us." As regards copper, he said: "In South Africa we have during the past year confirmed by examinaon the opinion we held before of the size and value of the ore deposits owned by the Bwana M'Kubwa Company, and in the reconstruction of that company recently carried through we took a considerable part on satisfactory terms. We are watching with great interest the development of this business, and we have accepted the position of consulting metallurgists to the company, seeing that the development on the ore treatment side can only proceed by the closest cooperation and assistance of our company. It may be that our shareholders are not aware of the magnitude of the ore deposits at this mine. The latest information upon this subject, upon which we can absolutely rely, is that there is estimated to be at least 5,500,000 tons of good grade copper ore to the 500 ft. level, of which 3,000,000 tons are developed to the 250 ft. level. This mine should become a very important copper producer."

The Royal Dutch and Transvaal Shale.

A full English version of the Royal Dutch report is now available, and contains many interesting items which have so far not been given much publicity on this side in the various comments on the report. For instance, some months ago a good deal of interest was aroused by a revival of the discussion of the possibilities of the South African oil shale deposits. The Royal Dutch Company now mentions that during 1921 a geological expedition was sent out to the Transvaal to examine the shale deposits, but "under the present circumstances plans for further exploration and exploitation of the fields offered will probably have to be abandoned." This statement is a little cryptic, but it presumably means that the deposits might not be payable at the present level of oil prices. The company whose name was mentioned in conjunction with that of the Royal Dutch in this connection was the African Oil Corporation, which has coal and oil shale areas in the Wakkerstroom district of the Transvaal and an adjacent district of Natal. It was evident that some progress had then been made with negotiations with the combine, the authorised capital of the African Oil Corporation being as much as £700,000, against only £118,500 issued in 10s. shares; and it is regrettable that present conditions apparently will not permit of the enterprise being carried further. It is understood that the African Oil people have, however, other important negotiations in hand.

The Tin Outlook.

Latest mail advices from London are to the effect that standard tin now stands £10 higher for cash and £9 better for three months, compared with values registered at the close of June, and a few pounds above the level it was at this time last year. "Three months" recently went up to £163 10s. and at the close the market was firm, although some fluctuation may now be expected within moderate limits after the steady rise seen lately. Presumably the improved statistical position has already been largely discounted. There are, of course, the large stocks held in the East by the F.M.S. Government, but the hope of a further shrinkage later on owing to the reduced output may give the bulls something to go for. The market since last February has been under the shadow of the big surplus and reports that it might be marketed regardless of loss. The world-wide stagnation in trade, the difficulties of doing business with Continental consumers due to exchange vagaries, and more recently the drying up of the American demand, have been all against the metal, but sentiment lately has undoubtedly veered round again. Tin, of course, is an uncertain metal and since the war ended its movements have been very erratic. The chief factors now are the prospects of a further cutting down of the visible supply figures, lighter sales from the East with reduced shipments, and a revival in the American demand on a settlement of the labour troubles in the United States. During the last day or so there has been a little more life about the American demand in anticipation of the industrial peace now in sight.

Notes & News.

Pretoria Portland Cement.

This company's annual report for the period ending June discloses a most satisfactory state of affairs. The profit was £138,464. That is, after allowing for income tax to June 1921, and providing fully for bad debts and depreciation of property, buildings, machinery and plant. Added to the above was £51,520, brought forward from the previous year, making a total of £189,984, which was distributed as follows: Dividend No. 28, of 10 per cent., £63,000; dividend No. 29, of 7½ per cent., £47,250; tax on them, £5,802; carried forward to next account, £73,932. The balance of 10s. due on 100,000 Cape Portland Cement Co., Ltd., shares was paid, and this company will probably start producing during the present month.

* * *

New Transvaal Gold Farms.

The New Transvaal Gold Farms, Ltd., is now pinning its faith to the development of its diamond possibilities. At the annual meeting last week Mr. J. T. Goldsbury, who presided, said: "I think the chairman at the last meeting mentioned the fact that a discovery of alluvial diamonds had been made on one of your farms, viz., Kareepoort, district Wolmaransstad. Prospecting operations are still being carried on with the object of ascertaining to what extent the deposit of diamond-bearing gravel exists, but as the area of the farm is no less than 5,380 morgen, you will readily understand that it will take a considerable time to thoroughly prospect the whole of the property. The results achieved so far, however, may be regarded as eminently satisfactory. From what I have told you, gentlemen, I feel sure that you will be satisfied with the position of the company, and will realise that the assets are worth considerably more than the values at which they appear in the balance sheet; indeed, bearing in mind the possibilities I have mentioned, the future prospects of the company are brighter than they have been for some years past. There is another point which I would like to bring to your notice, and that is that the company's farm Vaalrand is situated in direct line between Kareepoort, the property now being prospected, and Kareefontein, a farm adjoining Bloemhof which has just been proclaimed as an alluvial diamond digging by the Government. This would, therefore, indicate that Vaalrand has possibilities of being a paying diamond proposition, and it has been stated by people in the district that this farm carries diamonds."

* * *

Transkei Native Recruiting.

Apropos the information published in Port Elizabeth regarding the suspension of the recruiting of native labour for the mines in the Native Territories and its bad effects, the following telegram has been sent to the Port Elizabeth paper by the Chamber of Mines, Johannesburg: "Referring to your comments on recruiting operations, there is no truth whatever in the suggestion that partiality is being shown Portuguese natives in regard to engagement on the mines. The opposite is the truth. The mines have restricted the engagement of Portuguese natives to a greater extent than the engagement of British South African natives. In spite of the strike the mines are actually employing more British South African natives than in 1921. At 31st July, 1922, there were employed on the gold mines 91,724 British South African natives, and 75,516 Portuguese natives, as compared with 87,677 and 73,761 on the same date last year. Any unemployment of British South African natives is, therefore, not due to the mines, but probably to other industries which usually employ those natives not now employing them. A little consideration will show that the present suspension of recruiting operations is due to the fact that, owing to the strike the great majority of natives now engaged have only recently been engaged, and consequently the normal efflux of time-expired natives is not yet taking place. This position will result in an abnormal efflux of time-expired natives later on, requiring replacement."

Robinson Deep Costs.

The Share Market correspondent of the *Financial Times*, writing in mail week, said: "Robinson Deep 'A' were cabled as closing in Johannesburg yesterday at 14s. 9d., while Wit. Deep were up to 15s. buyers. In connection with the former there is an interesting article in the *South African Mining Journal* of 1st July, just to hand by mail. The opinion is expressed that 'few mines on the Rand have more to gain by a reduction in costs than the Robinson Deep.'" Since then the sensational rise in Robinson Deeps has amply confirmed our view.

* * *

Liquid Chemical Fire Extinguishers.

The desirability of standardisation in connection with chemical fire extinguishers was brought to the notice of the British Engineering Standards Association by the Association of Liquid Chemical Fire Extinguisher Manufacturers after correspondence with the various Government departments. A conference of oil interests concerned was convened by the British Engineering Standards Association and as a result of this conference a sectional committee was formed to undertake this work. One of the ruling principles of the Association is that no standards are prepared which would in any way interfere with progress and inventive design, and whilst it was generally recognised that standard methods of operation and interchangeability of parts of chemical fire extinguishers would be of material advantage to Government departments and other large users the trade felt that it would not at present be to the best interests of the industries concerned to carry the standardisation to this extent. The scope of the specification has, therefore, been confined mainly to materials and constructional strength. Every extinguisher purporting to be made in accordance with this specification must when completed withstand an internal hydraulic pressure of 300 lb. per square inch. The pressure generated in the machine under working conditions must not exceed 100 lb. per square inch and at least 95 per cent. of the fluid in the vessel must be automatically discharged. General requirements are laid down for the cap joint, cage, bottles, charge nozzle, etc., which while essential to the efficiency of the machine, impose no restrictions on the design.

* * *

Geology of the Bushveld.

It will be recalled that towards the end of January a scientific expedition, sent out by the Harvard University and the Shaler Museum, arrived in South Africa to make certain geological investigations in the Bushveld of the Transvaal, and especially into deposits of laccolite, which is a substance rich in tin and magnetic iron. The party consisted of Dr. G. A. F. Molengraaff, of Holland, who was the leader, Professors C. Palache and Reginald Day, of Harvard, and Dr. Frederic E. Wright, of the Geological Department of the Carnegie Institute. Dr. Molengraaff intends to return to Holland by the s.s. Rietfontein, leaving Capetown shortly. It is understood that the expedition met with a considerable amount of success, and that a good deal of valuable scientific information was obtained; but the necessary work in connection therewith, which is pretty considerable, will have to be completed in Holland and the U.S.A. After the work for which the expedition had been formed was completed, its members made further investigations on their own, Professor Molengraaff proceeding to the northern portions of the O.F.S. and the Stormberg, while some of the others went nearer the Natal border, Mont aux Sources also being visited. His American co-workers have already left South Africa.

* * *

The Natal Coal Fusion.

As already announced, and confirmed by our special commissioner in the Natal coalfields, Natal Navigation Collieries and Estate has entered into an agreement with the Vryheid (Natal) Railway Coal and Iron Company to acquire the whole, or an interest equal to at least 80 per cent., of the Vryheid shares at 17s. 6d. each. This will necessitate increasing the capital of the Natal Navigation Collieries to £725,000 by the creation of 200,000 £1 shares, and an extraordinary meeting of the company will be held at Durban on 11th September to pass the necessary resolutions. It is proposed to acquire the Vryheid shares on the basis of 4s. 2d. in cash and 13s. 4d. in fully paid shares of £1 each of the Navigation Company taken at 30s. per share (that is, four Navigation shares for nine Vryheid shares). Fractions of shares will be paid for in cash. Apart from the agreement the directors have given to Vryheid shareholders an opportunity of applying the whole or part (4s. 2d. or 1s. 8d.) of their cash portion of the purchase price to the subscription of shares of the Navigation Company at 30s. The object of the proposal is to bring under better control the supply of and to promote efficiency in dealing with coal suitable for shipment, especially for export. By acquiring the Vryheid Company's collieries the Navigation Company will be enabled, if required by an extension of the Natal coal industry, to draw upon further supplies of suitable coal as and when required. Incidentally the exchange would also bring about a reduction in working costs and in costs of administration. Shareholders representing over 80 per cent. of the Vryheid Company's capital have already ratified the provisional agreement. The Vryheid Company's balance-sheet for the year ended 31st January, 1922, shows a profit of £37,136, which is undistributed and is to be taken over as part of the assets. They hold a contract to supply the South African railways with a minimum of 20,000 tons of coal a month, until, at the earliest, 31st December, 1926, and they have for years sold large quantities of coal for shipment and for local consumption.

REID BROS.
— (S.A.), LIMITED. —

Sole Agents for:

CARRON COY.—HAULAGE GEARS, Etc.
ANDERSON, BOYES & COY.—ELECTRIC COAL CUTTERS.
HARDY PATENT PICK COY.—"HARDIAX" AIR COAL CUTTERS.
BLANTYRE ENGINEERING COY.—SCREENING PLANT.
WM. ARNOTT & CO.—CORNISH AND LANCASHIRE BOILERS.
QUASI-ARC ELECTRIC WELDING APPARATUS.
SMALL & PARKES—BELTING, PACKING, Etc.
FINNEY PATENT HAND PUMPS.
WELDLESS STEEL CHAINS.
CHAPMAN DOUBLE BALL BEARINGS.

JOHANNESBURG.
P.O. Box 802 'Phones 6070/1
AND AT DURBAN.

If You Want Anything

:: :: **Electrical** :: ::

The Place

G-E. BUILDING,
Marshall and Simmonds Streets.

and

The Sign

THE GUARANTEE OF EXCELLENCE
ON GOODS ELECTRICAL.

IS ALL YOU NEED TO REMEMBER

**SOUTH AFRICAN
GENERAL ELECTRIC CO., LTD.,**

G-E. Building, 16, Simmonds Street, Johannesburg.

Box 1905 Telegrams : "INGENETRIC." 'Phone 4321

With Agents throughout the Union, Rhodesia, Portuguese East Africa and Belgian Congo.

The Week in the Sharemarket.

STRONG AND ACTIVE—LONDON BUYING—SMALL STOCKS AS DIVIDEND PAYERS—FAVOURABLE AUGUST OUTPUT PROSPECTS—A DIAMOND REVIVAL?

The market during the week has been strong and active. London continues a buyer of the heavies, thus releasing money for speculation in the smaller shares—not only speculation but investment in stocks hitherto regarded as highly speculative—which may now be considered sound dividend-payers. With regard to these there are quite a few that merit very careful investigation in view of decreased costs and consequently increased ore reserves. It may be pointed out that the ore reserves of a good mining company are similar to the stock-in-trade of a commercial business and therefore form the backbone of the industry. Quite a number of investors in the past have looked for 12½ to 15 per cent. gross on gold investments. Under the present favourably altered conditions this expectation is being reduced to a 10 per cent. gross basis, and we venture to think that investors purchasing our dividend-payers are playing for safety even upon this reduced basis. Our information from several reliable sources with regard to the London market is that the public are taking more interest in our shares and that hitherto the London business in Kaffirs has been chiefly professional. With this information one may anticipate more general activity during the month of September upon the return to town of the many holiday-makers who are absent from London during July and August. Although nothing definite is known, we feel that we may safely prognosticate for most of the mines increased profits and lower costs for the current month. There is an indication of a revival in the diamond market. Quotations have been received during the last few days at enhanced prices for the leading shares in this section, while local demand has suddenly sprung up for the leader of our local smaller descriptions, viz., Consolidated Diamonds. There are rumours, not without foundation, of sales of material parcels of stones. This news is most encouraging, and should the demand for stones continue there is little doubt that we can look for activity in the various shares under this heading during September and October.

	Fri. 18th.	Sat. 19th.	Mon 21st.	Tues. 22nd.	Wed. 23rd.	Thurs. 24th.
Anglo-Amer. Corp.	21 4½	22 3	22 3	23 7½	25 9	24 9
Aurora Wests		4 9*		5 6		6 0
Brakpan Mines	53 6	53 6	53 6	54 0	54 6*	54 6*
Bushveld Tins	—	—	0 6*	—	0 3*	—
Cinderella Cons	4 6†	4 6	4 6†	4 0*	4 3	4 4
City and Subs.	2 2*		2 4†	2 4†	2 4†	—
City Deeps	54 0†	53 0	54 0†		53 6	53 6*
Clydesdale Colls.	19 6*	19 6*	19 6*	19 0	19 6*	19 6*
Coronation Colls.						32 6*
Con. Diamonds	15 1½	15 1½	15 3	15 3	16 10	16 3
Con. Investments					29 0†	28 0*
Con. Langlaagtes	19 0†	19 0†		19 0†	19 0†	19 0†
Con. Main Reefs	14 6	14 6*	14 6*	14 6	15 0	14 9
Con. Mines Select	14 0*	14 6*	15 0*	17 3*	19 0	17 9
Do. Freeholds	0 11*	1 0†	0 10*	0 11*	0 11	0 11*
Do. Syndicates	5 3	5 3	5 4	5 2*	5 9	6 0*
Crown Diamonds		7 1	5 4	—	6 0	6 3
Crown Mines	54 0	54 6	55 6	[illegible]	56 6	56 0
Daggafontein Mines	4 5	4 4	4 3	4 5	4 3	4 3
E.R. Coals	1 9*	1 9*	1 10*	2 0	1 11†	1 10*
E.R. Deeps	1 0*	—	0 11*	1 0	1 6†	—
E.R. Minings	—	10 0*				
E.R. Proprietary	11 10½	12 0	11 9*	11 9	12 1	12 9
Eastern Golds.				0 8*	0 7*	0 7
Ferreira Deeps	—	7 6*	7 6*	7 6*	—	8 9
Frank Smith Dmds	3 7	3 7*	3 6*	3 8	3 8	3 8*
Geduld Props.	64 0*	65 0	65 0	—	66 3	66 6
Geldenhuis Deeps.		8 0		8 —	8 3	8 9
Glynn's Lydenburgs			14 6*		14 6*	
Govt. Areas	101 6	102 0	101 6	104 9	104 6	104 0*
Hume Pipes		13 3*	14 0	—	14 6	13 6*
Knight Centrals	4 6*	4 7*	4 8*	4 11	4 10*	5 0†
Lace Props.	11 0*	11 0*	11 0*	11 —	11 9	12 6
Leeuwpoort Tins	6 0	5 6*	5 6	5 6*	[illegible]	5 6
Luipaardsvlei Est.		4 6*	4 6*		4 9*	
Lydenburg Farms	5 0†	—	4 6*	4 6*	4 6*	4 6*
Meyer and Charltons	72 0*		70 0*	73 0*	73 0*	
Middelvlei Est.	2 0*	2 6*	2 6*	—	2 6†	2 6†
Modder B.'s	31 3	34 0	33 9	34 [illegible]	35 0	34 7*
Modder Deeps	14 9	14 3	14 0	14 6	14 6	14 9
Modder Easts	8 0	8 1½	8 0*	8 4	8 6*	8 6*
Natal Navig. Colls.	29 0	27 6*	27 6*	28 0*	27 6*	27 6*
National Banks	210 0†	210 0†		210 0†		
New Eland Dmds.		35 0†		35 0†		36 0*
New Era Cons	7 3*	7 6	7 3*		8 0	8 0
New Geduld Deeps	1 6*	1 6*	1 6*	1 6		1 9
New Kleinfonteins	8 9*	9 9	9 6	9 6	9 3*	9 0*
New Modders	80 0	79 0	79 0	82 0	83 0	84 0

	18th. Fri.	19th. Sat.	21st Mon.	22nd Tues.	23rd. Wed.	24th Thurs.
New Primrose			6 0†		6 0*	6 6*
New Unifieds			6 0†			4 6*
New State Areas	32 0	32 0	32 0	31 9	32 0*	32 3
Nigels		1 0*	6 0†	1 0*		
Nourse Mines	17 0	17 0*	17 6	17 6	17 4	18 0
Pretoria Cements	14 0*	14 0	14 0†	13 0*	12 6*	13 6*
Rand Collieries	1 6*	1 4*		1 3*	1 9	
Rand Mines	53 0*				55 0†	
Rand Nucleus	1 3*	1 3*	1 3*	1 3*	1 4†	1 —
Randfontein Centrals	15 0	15 0	15 6†	15 3	16 3	16 6
Do. Estates	24 0	24 10½	25 9	26 7½	25 9	25 10
Robinson Deep "A"	32 6	33 1	32 9	31 4	31 0	33 6
Robinson Deep "B"	10 1½	10 7½	10 3	10 7½	10 6	10 6
Rouxville Diamonds	1 2*	1 0*	1 2*	1 2*	1 1	1 1
Roberts Victors	8 3†	8 3†	8 3†	8 3†	7 9	7 9*
Rooibergs	3 0*	3 0*	3 1*	3 1*	3 1*	3 0
Ryan Nigels	4 0†		4 0†	4 0†		4 0†
S.A. Reserve Bank	£140*	£140*	£140*		£140*	£140½*
Simmer and Jacks	4 6	4 6	4 6	4 3	4 6	4 6
S.A. Breweries	27 6*				27 0*	27 6*
S.A. Lands	5 0*	5 0*	5 0	5 2*	5 3	5 1
Springs Mines	18 3	19 6	19 3	30 0	32 6	32 3
Sub-Nigels	13 3*	13 3	13 6	13 6	13 9	13 9
Swaziland Tins	5 0*	5 6*				6 0*
S.A. Alkali	15 0*	15 3*	15 0*	15 6	15 0*	15 3
S.A. Townships	10 0*	11 0†	10 0*	11 0†	10 3	10 3
Transvaal Lands	15 9†	15 4†	15 9†	15 0	15 3*	15 3*
Trans. G.M. Estates	15 9	16 0	16 0	15 6*	16 0	16 6
Transvaal Silvers	12 6	12 0*	12 0*	12 3*	12 3	12 0*
Tudors	0 11*	0 11*	0 9*	0 11*	0 11½*	0 10
Van Dyks	1 6*	1 9	1 11	2 0	1 11	1 11
Village Deeps		15 9	15 0	14 9*	16 0	16 0*
West Springs	14 6	14 7½	14 7½	14 9	15 10	15 9
West Rand Cons.	5 3*	5 3*	5 3*	5 3*	5 3*	5 0*
Western Rand Est.	5 6*	5 9	5 9	5 9	5 9	5 9
Witbank ollieries	39 0†					
Witwatersrands				18 0	18 3*	18 3*
Wit. Deeps	17 3*	17 3*	17 3*	17 6	17 0*	17 0
Zaaiplaats Tins	2 2	2 2*	2 2*	2 2*	·2 0*	2 3
Union 5 per cent.	£102¼*	£102*	£102½*	£103	£103¼†	£103*

* Buyers. † Sellers.

OSBORN'S
"TITAN"
MANGANESE
STEEL CASTINGS

FOR

ROTARY AND JAW CRUSHERS,
MORTAR BOX LINERS, ETC.,
AND FOR ALL PARTS SUBJECT
TO SEVERE ABRASION.

GET THE ABSOLUTE BEST
AT NO EXTRA COST.
FROM

SAMUEL OSBORN
(S.A.), LTD.
BOX 3162 PHONE 4673
JOHANNESBURG
WORKS: CLYDE STEEL WORKS, SHEFFIELD.

"CAMEL HAIR" BELTING

NOTICE

TO BELTING MANUFACTURERS, DEALERS, AND PURCHASERS.

NOTICE IS HEREBY GIVEN that the term "Camel Hair" applied to Belting is the Trade Name and Registered Trade Mark of F. REDDAWAY & CO., LIMITED. All persons selling or offering for sale Belting as "Camel Hair Belting" which is not of the manufacture of Messrs. F. Reddaway & Co., Limited, will be prosecuted, and the public are warned against purchasing spurious Belting sold under this name or any imitation of the Trade Names or Trade Marks of F. Reddaway & Co., Limited. The "Camel Hair," "Camel" Brand, and "Camel" Belting, can be obtained only from Messrs. F. Reddaway & Co., Limited, or their Representatives.

All Communications to be addressed to:—

BARTLE & COMPANY, LTD.,

LOVEDAY HOUSE,
P.O. BOX 2466. PHONE 3553.
JOHANNESBURG.

STANDARD BANK
OF SOUTH AFRICA,
LIMITED.
(With which is incorporated the African Banking Corporation, Ltd.)

Established 1862

Authorised Capital - - - -	**£10,000,000**
Subscribed Capital - - - -	**£8,916,660**
Paid-up Capital - - - - -	**£2,229,165**
Reserve Fund - - - - -	**£2,893,335**

GENERAL BANKING BUSINESS transacted at all Branches and Agencies; DEPOSIT and CURRENT ACCOUNTS opened; PURCHASE and SALE of INVESTMENT SECURITIES effected, etc.

SAVINGS BANK ACCOUNTS opened on terms, particulars of which may be obtained on application.

The BANK is in close touch with TRADE and INDUSTRIAL CONDITIONS, both local and overseas, and special attention is given to COMMERCIAL ENQUIRIES from customers.

EXECUTOR and TRUSTEE business undertaken.

Over 360 Branches and Agencies in Africa.

Agents and Correspondents throughout the world.

USE

"PORPOISE"

BRAND

ANTIFRICTION GREASE

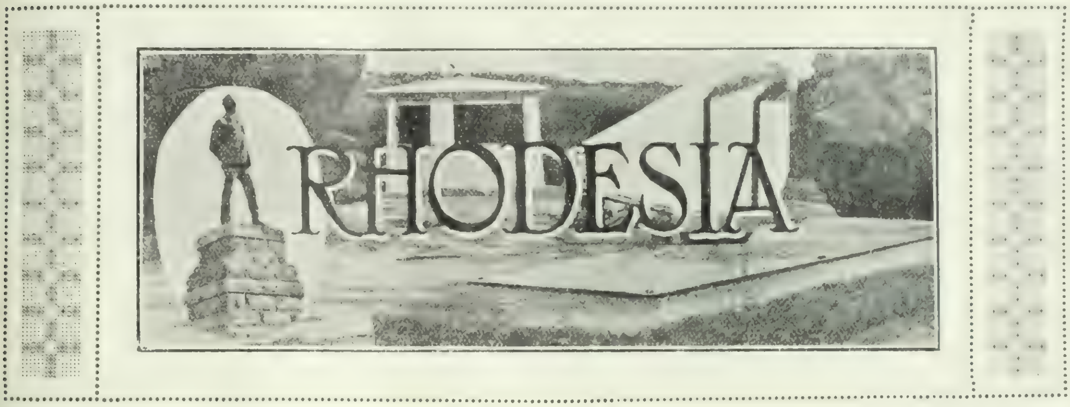
Used for years by the majority of Mines all over South Africa.

Manufactured by

South African Lubricants & Chemical Works, Ltd.,

DURBAN & JOHANNESBURG.

Phone 1618, *Johannesburg Branch Office.*



WHAT RHODESIAN MINES BUY.

The following list shows the value, at place of purchase, of the imports of the principal mining material and stores into Southern Rhodesia. The particulars are taken from the Customs Returns by the Rhodesian Chamber of Mines.

	1920	1921.
Acid, Sulphuric	£4,553	£5,890
Assay Apparatus	1,432	2,382
Blasting Compounds and Dynamite	87,900	91,798
Borax	1,765	2,159
Candles	43,448	34,782
Caustic Soda	989	2,201
Cement	551	857
Coal, Coke and Patent Fuel ...		55
Composition, Boiler	330	709
Composition, Metal	2,391	1,649
Copper, Plate and Sheet	3,356	999
Copper, Bar ...	18,266	6,554
Cyanide of Potassium	28	326
Cyanide of Sodium	36,661	54,278
Detonators and Fuse	34,728	43,251
Electric Fittings, inc. machinery	70,968	88,332
Fire Bricks and Clay	75	315
Grease, Antifriction	8,641	7,163
Iron and Steel—		
Angle, Channel, and T	1,644	1,816
Bar, Bolt, and Rod	30,072	36,349
Chains	7,256	8,656
Girders, Beams, Joists	5,601	3,563
Galvanised	12,228	9,278
Galvanised Corrugated	72,986	62,389
Pig and Ingot ...	1,373	1,546
Pipes and Piping	25,057	29,570
Plate and Sheet	8,932	11,459
Lead—		
Bar and Sheet	188	363
Foil and Acetate	20	21
Pipes and Piping	162	40
Lime	3,144	3,739
Litharge	72	329
Machinery—		
Bands and Belting	24,446	27,661
Buckets and Trucks	10,107	9,593
Mining	71,784	57,283
Packing	7,593	9,282
Parts ...	38,952	110,698
Pumps	12,097	19,021
Oil—		
Castor ...	£8,057	£8,712
Lubricating	36,973	58,186
Quicksilver	896	3,961
Tramway Material	4,384	114
Waste, Cotton	2,844	3,791
Wire Rope ...	15,527	9,768
Wood—		
Handles for Picks, etc.	4,474	1,656
Unmanufactured	47,773	52,867
Zinc	14,636	11,015
	£789,636	£895,110

SMALL MINES' PROGRESS.

ENCOURAGING FINDS.

The Sabiwa gold mine, situated about eight miles from Gwanda township, is about to be reopened, after having been closed down for several years, by the London and Rhodesia Mining and Land Co., Ltd., says a correspondent of the *Bulawayo Chronicle*. Mr. Digby Burnett, formerly manager of the Bushtick Mine, is the consulting engineer in charge, and the company has been absorbed, as generally known, with the Bailey group of Rhodesian interests. The mine was originally the property of the Rice-Hamilton Syndicate, and on the liquidation of that syndicate passed under the control of Rhodesia, Limited, which company, in its turn, has also come within the Bailey orbit. The property comprises a large number of claims on a so-called banded ironstone or iron-impregnated schist body, averaging about ten feet in width. After a lengthy period of development an extensive reduction plant was laid down, but great difficulties in extraction ultimately brought about the closing down of the mine. In 1909 it was announced that a satisfactory process had been evolved for the economic treatment of the ore, but nothing followed this statement, and at a later date Messrs. Littlejohn and Whitby, the Johannesburg metallurgists, carried out a series of extraction tests with the Sabiwa ore at the Colleen Bawn Mine reduction works. Successful results were obtained by coarse crushing, fine grinding by tube mill, and direct cyaniding. Notwithstanding these conclusions, the mine has remained closed down for several years, but the gratifying fact is now known that it will shortly be again running. The newly-discovered reef on the old Morton-Pinckney property, near Gwanda, is being actively developed by the owners, Messrs. McKie and Davis, and the results are reported to be very encouraging. The reef is a fissure vein averaging about 18 inches in width. On the extension of the same property, Mr. Duncan Simpson, the manager of the near-by Champion Mine, has just made a most interesting find which may possibly throw some light [illegible] An ancient working had been located and work is in progress to clean it out. The "filling" was practically cemented, and explosives were necessary to break out the ancient debris. At 30 feet depth a human skeleton was found, and close to the hand, as if suddenly relinquished, a stone muller or hammer, similar to those frequently found in other old workings. The skull was fortunately preserved intact and the other parts of the skeleton are being carefully looked after. The skull will doubtless receive close examination and study by ethnologists of authority, and whether pronounced to be of Negroid or Semitic type the discovery will create much interest. The Golden Oricle is a property lying on the eastern slope of the Mullingwane hills, which has attracted considerable local attention during the past two years, and by reason of the long length of strike and dimensions and values of the reef it may eventually carry a heavy reduction plant, though, it must be said, milling results have so far not been particularly striking. On the centre block (belonging jointly to Messrs. J. H. Byerley and E. R. H. Lewis) the reef runs right through, and has been opened up for about 800 feet. About 1,000 tons of surface rock taken over this distance gave an average recovery of 5 dwt. per ton. From four shafts assay results are stated to have been as follows: No. 1 shaft: depth 70 feet, reef 6 feet in width at bottom, assaying 18 dwt. No. 2 shaft (50 feet distant from No. 1): depth 30 feet; assay value 10 dwt. over 3 feet. No. 3 shaft (60 feet from No. 2): depth 40 feet; assaying 14 dwt. over 30 inches. No. 4 shaft (400 feet from No. 3): depth 65 feet; assay value 8 dwt. over 3 feet. The reef has been exposed for nearly the whole length of strike, milling returns giving a recovery of 5 dwt., though this included a large percentage of low-grade rubble. A current impression that the ore is refractory is not admitted by the owners, who assert that an easy and economical extraction can be obtained by cyanide. They estimate the proportions in recovery at 25 per cent. from mill and concentrates, and 50 per cent. from cyanide treatment, with another 25 per cent. in the slimes. Another resuscitation: The old Matabele Sheba Mine, situated overlooking the Umzingwane, at the western end of Essexvale, seven miles from the siding, is to be reopened after some years of abandonment. Mr. E. Warren, apparently not satisfied with the prospects of his new mine, the Wardwar, has decided to try his luck with the Sheba, and work is to be commenced forthwith. Just as I close these notes I am informed that Messrs. Ives and Jones, on the New Year, have broken into good rock, going two to three ounces.

The Chartered Company and the Union.

"Eminently statesmanlike" is the description applied by the London papers to the offer of General Smuts to the Chartered Company and to the Rhodesian electorate. Mr. D. O. Malcolm had a big task to perform in mail week in explaining the offer to the Chartered Company shareholders. As a result the Chartered shareholders, as already announced by cable, have provisionally accepted the offer, and the matter is now in the hands of the Southern Rhodesia electorate, who have to declare their wish by means of the forthcoming referendum. It has already had under consideration for some months the Draft Constitution on the basis of which it may take up the task of Responsible Government if, after all, it favours that alternative. But General Smuts's offer is at least clear. He tenders a large representation in the Union Parliament, with special consideration to the needs of Southern Rhodesia, and he offers to the province a substantial annual development grant guaranteed for a number of years. Under the Draft Constitution the financial position would be by no means so clear, more particularly if the Chartered Company were to succeed with the Petition of Right, which (under the advice of Sir John Simon) it has provisionally lodged. From a financial and business point of view there is no doubt as to which of the alternatives, Union or Responsible Government, would be the safest, and therefore, perhaps, most attractive choice for the Southern Rhodesia electorate—as well as, incidentally, for the shareholders of the Chartered Company. But sentiment too often bulks bigger than business in political matters, and, as Mr. Malcolm remarked at the recent meeting, "prophecy is the most gratuitous form of error." Southern Rhodesia must be left to make its own decision and Chartered shareholders will have to wait for it with what patience they can muster. On the important point as to what it will mean financially to the Chartered Company if Southern Rhodesia does enter the Union by 31st March, 1924, Mr. Malcolm was able to give approximately accurate figures. Perhaps they will be more readily grasped if put in tabular form:—

Valuation as at 31st March 1922

Union Government's payment … … … …	£6,215,000
Less—	
Compensation to independent holders in Rhodesia Railways Trust (about)	285,000
Net receipts for railway assets and lien under the Cave Award … … … … … …	£5,930,000
Cash in hand	160,000
Investments at market value, or, where unquoted, at a conservative estimate … …	2,322,0000
Total liquid assets … … … …	£8,712,000
Less—	
Redemption of debentures at 105 per cent. and sundry creditors (about) … … … …	1,500,000
Net liquid assets	£7,212,000
Commercial assets, including 4,000,000 acres of land, 125,000 cattle, good commercial debtors, etc. (about) … … … … …	2,200,000
Value of Southern Rhodesia assets (not including any allowance for mineral rights) … …	£9,412,000

Thus on a minimum estimate the issued ordinary capital of £8,937,324 in £1 shares would be represented by net assets worth about £500,000 in excess of that sum. But in addition the mineral rights of Southern Rhodesia are worth, on only ten years' purchase, some £1,500,000. Further, the 4,000,000 acres of land left to the Company may easily prove of greater value eventually than the £2,200,000 allowed above for the whole of the Company's commercial assets. Then the vast territory of Northern Rhodesia is excluded from the calculation. Yet the Company's claim for reimbursement of administrative deficits on that account already exceeds £2,000,000. As to what the mineral and other rights in Northern Rhodesia may be worth, we have no means of guessing, but these also are thrown in at nothing in the above calculation. Lastly, if the Chartered Company did not receive payment from the Union Government before 31st March, 1924, it would be entitled to a further £621,500 in interest. As regards what the Chartered shareholders may get out yet, the hope is that a return of at least 10s. per share would be made. It will be seen that such a distribution would lie easily within the capacity of the Company once the Smuts' deal were actually completed. But that question now remains to be decided by the Southern Rhodesia electorate.

Box 3807. **Tel. 5892.**

WRIGHT'S ROPES

H. ALERS HANKEY - - - Sole Agent.

ENGINEERING SECTION.

The Treatment of Mine Timber.

At a recent meeting of the S.A. Institution of Engineers, the following contribution to the discussion on "The Preservative Treatment of Mine Timber," by Mr. L. D. Hingle, was read by the secretary:

N. B. Eckbo, Officer in Charge of Timber Investigations, Forest Department, Union of South Africa, wrote: I am very keenly interested in the subjects of Timber Seasoning and Preservation and greatly indebted to your Institution for extending an invitation to contribute to the discussion on the excellent paper prepared on the subject of Preservative Treatment of Mine Timber, by Mr. L. D. Hingle, B.Sc. Mr. Hingle brings out in his paper that the mines are using very large quantities of timber annually and that the Transvaal mines alone used timber during the year 1920 valued at £1,155,000. To this amount should be added the cost of peparation, transport and placing the timber in the mines, which would represent a very important item of cost. If the timber lasts the life of the mine, there would be no need for preservative treatment, but since this is not the case in portions of many mines, timber must be replaced at a cost estimated to be three times that of its original cost. In the latter case then, it would seem clear that preservative treatment would be a practical proposition provided the cost of the treatment would be in a favourable ratio to the cost of the timber plus replacement charges. The experiments carried out by Mr. Hingle are very encouraging, and he points out, in a very striking manner, important savings that may be effected.

Preservative treatment of timber has been practised with a great deal of success abroad. A great variety of chemicals and methods have been used, not only in connection with mine timbers, but poles, posts, sleepers, building timbers, in fact most woods exposed to the weather or buried in the ground are given protection from decay by use of preservatives.

Very little has been done so far in South Africa in this respect, beyond brush treatments, a small amount of experimental work and the high pressure treatment given sleepers at the creosoting plant at Mossel Bay. The latter plant has been in operation for a great many years, and the life of yellow wood sleepers has been increased from about three years to fifteen. The sleepers are obtained from the Knysna forests to be air-seasoned for not less than nine months. They are then placed inside the airtight cylinder where a vacuum of 16 inches is first drawn for 20 minutes before the hot creosote (160°F) is injected under a pressure of 120lbs. depending on the wood treated, until an absorption is obtained of one gallon per cubic foot, which takes 2½ hours. In this connection I would like to state that creosote of requisite grade could probably be landed in South Africa to-day at about 1s. 6d. per gallon if large enough quantities could be ordered at a time. I read a report in regard to the inflammability of this preservative some time ago. A mine in U.S.A. that used partly creosoted and partly non-treated timbers was subjected to a terrific fire. A subsequent careful examination of the mine timbers disclosed the somewhat startling condition that the treated timbers were charred while the othes were entirely consumed. It would not be safe to jump to any definite conclusion based on the above, not knowing the details of the case, still it is possible that the strong public opinion against creosote and other oil-treated timber on account of inflammability may be somewhat exaggerated. It is not meant by this to detract in any way from the use of zinc sulphate, that has given such promising results at a very slight cost to the mines. It will be of interest to the members of your Institution that the Forest Department is now planning an Experimental Timber Preservative Station at Pretoria. The site has been selected, a small office and workshop is erected, a derrick and a vertical open tank have been installed. The first supply of posts, poles and preservatives has arrived making it possible to commence experiments at once. The present equipment makes it possible to give a full non-pressure treatment to posts and a butt treatment to poles. A horizontal tank has been made to make it possible to give a full treatment to poles, but this has not been installed yet. On account of the many species of wood that do not respond readily to open tank treatment, the plans provide for an experimental high-pressure cylinder 24 ft. long and 2½ ft. diameter to be installed during the financial year. This will be equipped with heating coils and a steam spray inside, vacuum pump, force pump, and a condenser in connection with the vacuum pump, gauges, and thermometers, etc. The plant will be fully up-to-date, making it possible to carry out preservative treatment under a great variety of conditions, and the plant may also be serviceable for experimental seasoning of timber under vacuum. In addition to being of assistance in treatment of mining timbers, it is contemplated to experiment with cheap preservatives for farmers' fence posts, telephone and telegraph and electric transmission poles, sleepers and building timbers. The real need for this work is particularly well illustrated by the fact that almost all woods have such a short life in contact with the soil, that metal has to be imported from overseas to take its place, in spite of the rapidly increasing yield from the South African plantations.

Quicksilver in South Africa.

In a brochure on quicksilver, the Imperial Mineral Resources Bureau says: "Cinnabar occurs at several localities in South Africa, but none of the known deposits has proved to be sufficiently extensive or rich to warrant expenditure on treatment plant. In the Lomati Valley, about 25 miles from Hectorspruit, on the Delagoa Bay railway, cinnabar is found in the contact zone between quartzites and altered slates and intrusive granite. The ore is also found in the Erasmus mine in the Marico district, where it is associated with galena and zinc-blende. Thin stringers of the mineral have been found at Mosita, near Mafeking, but the occurrence does not appear to be of economic value."

STAFFORD MAYER COMPANY (South Africa), LIMITED.

(INCORPORATED IN MAURITIUS.)

30, Commercial Road, DURBAN.

Codes: Bentley's A.B.C. 5th Edition. P.O. Box 1381. Telephone 3273.
Cable and Telegraphic Address: "STAFMAYER," Durban.

AGENTS FOR:

ENYATI COLLIERY, LTD.
BUFFALO COLLIERY, LTD.
BERNICA COLLIERY, LTD.
BOSCHHOEK ANTHRACITE COAL, LTD.

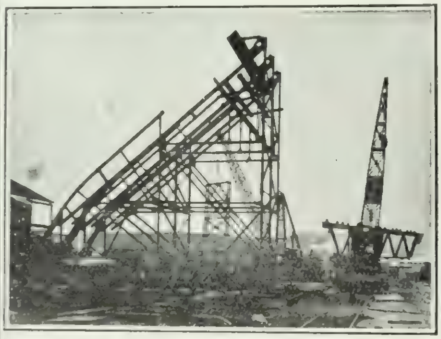
(INCORPORATED IN MAURITIUS).

Telephone No. 80. Telegrams and Cables: "ENYATI." P.O. Box 31, Vryheid, Natal
Codes: Broomhall's Imperial Combination; A.B.C. 5th Edition.

ENYATI, BERNICA and BUFFALO COLLIERIES are Contractors to the Admiralty and South African Railways.

FIRST GRADE Coal supplied for Export, Bunkers and Industrial Purposes.

AGENTS FOR **ALBION SHIPPING CO.,** PORT LOUIS, MAURITIUS.



Illustrations show part of an incline gantry for the Delagoa Bay Coaling Plant, under Construction.

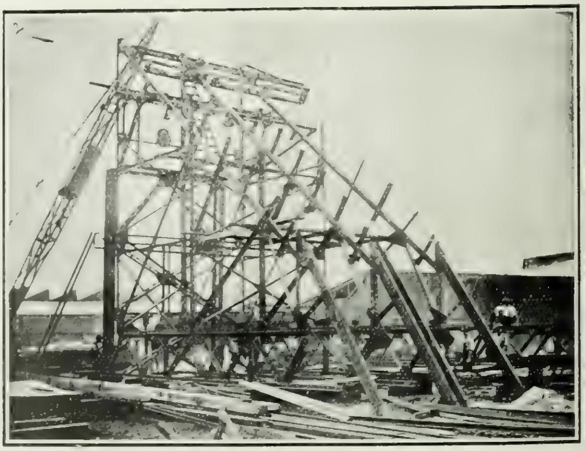
STRUCTURAL STEEL-WORK.

BUILDINGS, BRIDGES, ROOFS, TANKS, HEADGEARS, ETC

Sole Agents for HELICAL REINFORCING RODS.

Large Stocks of Steel Joists, Angles, Channels, Bars, Plates, etc.

Agents for the HARVEY ENGINEERING CO., LTD., Glasgow

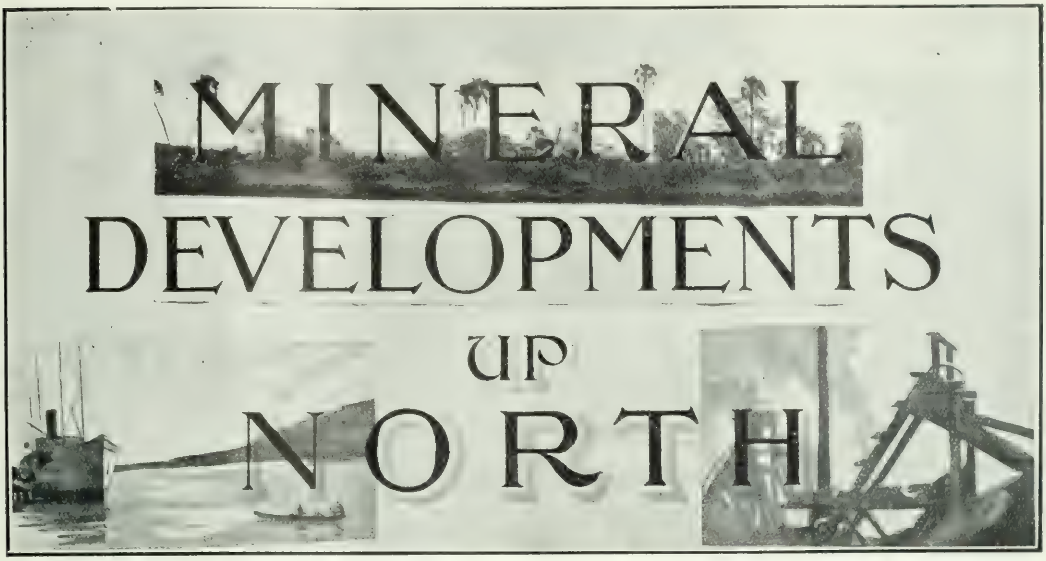


GILBERT HAMER & CO.,
LIMITED.

Head Office and Works: CONGELLA WHARF, DURBAN.

Box No. 301. Telegrams: "Girders."
Telephone No. 872.

Johannesburg Office: ROYAL CHAMBERS, SIMMONDS STREET.



MINERAL DEVELOPMENTS UP NORTH

The Development of the Kasai Diamond Fields.

From an interesting and lengthy paper by M. Henri de Rauw, translated by M. J. Rousseaux, we take the following account of the Kasai diamond fields.

In his paper, Mr. de Rauw gives the story of the Forminière, the great Belgian-American company founded in the autumn of 1906, and points out that if King Leopold required Messrs. Thos. F. Ryan and Daniel Guggenheim to interest themselves in the business, it was to interest America in the Congo and to thus safeguard the colony as well. The Forminière produced in 1914 23,877 carats, in 1915 48,934, in 1916 53,940 in 1917 89,907 carats. In 1918 it produced 164,188 carats, and its native labourers numbered 3,700. In 1919 it produced 215,489 carats, its native labourers numbered 5,500, and its local white staff 37. In 1920 it produced 213,092 carats, its native labourers numbered 9,090, and its local white staff 57. In 1921, on account of the crisis, it reduced its production to 150,058 carats. However, the development of its discoveries, the construction of roads, and the creation of cultivated areas to feed its staff and native labour brought its native labour above the 10,000 mark and its local white staff to 83. Since the beginning of its working (1913) the Forminière produced up to the end of 1921 985,000 carats. Since the beginning of 1917 and up to the end of 1921 Diamang produced 268,000 carats (48,504 in 1919, 93,529 in 1920, and 106,719 in 1921). Since the beginning of 1920 the Société Minière du Beceka produced 24,066 carats (8,075 in 1920, and 15,941 in 1921). Since the beginning of 1920 the Société Minière du Kasai produced 12,220 carats (4,283 in 1920 and 7,937 in 1921). Whilst in 1919 South Africa produced 2,588,000 carats, the Kasai diamond fields produced 263,993 carats, viz., 10·2 per cent. of the South African production. In 1920 South Africa produced 2,545,017 carats and the Kasai diamond fields 318,979 carats, viz., 12·5 per cent. of the South African output and 9 per cent. of that of the world. In 1921 South Africa produced 806,643 carats and the Kasai diamond fields 280,655 carats; then 34.8 per cent. of the South African production and 21 per cent. of that of the world. In 1920 the Forminiere was the fourth largest producer as to quantity and the fifth as to the value of the diamonds produced. Now, thanks to the Forminière, Antwerp, since long a diamond cutting centre, has no longer to purchase its diamonds abroad, the Forminière having opened sales' offices there. After painful and even disappointing beginnings, the Forminière is now developing considerably, and this confirms the theory of King Leopold, a theory according to which, in colonies chiefly, powerful companies with strong financial backing are the only ones able to stand the ups and downs for the first years to bring enterprise to success, and to thus develop the country. As known, the Forminière, the Minière Beceka, and the Minière du Kasai are controlled by the Brussels Société Generale de Belgique (one of the oldest and most powerful banks on earth).

The Largest Diamond Fields in the World.

Mr. de Rauw states that the prospecting made in every direction has brought about the discovery of diamonds:—In the West: in the Kwilu basin, up to the confluence of the Kwilu with the Kwango. In the East: up to the Lomami valley, below Kisengwa. In the South: up to the sources of the Kwanza and of the Kubango (a Zambesi tributary). And, he adds, the Kasai diamond fields extend probably in a S.W.-N.E. direction, and are therefore the largest diamond fields in the world.

Where the Diamond Companies are Working.

The Forminière is working the Kasai tributaries Tshikapa and Longatchimo and their tributaries inside the Congo territory. Thirteen fields are worked, and the working of additional fields is contemplated. The Société des Diamants de L'Angola is working the Tshikapa, the Tshiumbe, the Luembi and their tributaries in Angola. Nine fields are worked. The actual area of the Société Minière du Beceka is the Lubi and Bushimaie Rivers (tributaries of the Sankuru River), and a great many of the tributaries of the Lower Lulua River. One field is worked, and the working of three others is being prepared. The actual area of the Société Minière du Kasai is formed by the left-hand tributaries of the Luebo and several tributaries of the Kasai. Two fields are worked.

The Yield of the Alluvial Deposits.

The yield of the alluvial areas varies sometimes very much. Practically gravels yielding one carat per cubic metre are considered as very satisfactory. In exceptional

[illegible]

The Weight of the Diamonds.

[illegible] upper part of the Kasai [illegible] central part, and [illegible] and the more north-westwards (Kwango) the rivers are the greater this diminution is. A strong proportion of the Kasai diamonds has the fine form and the perfect limpidity of [illegible] quality. Some are lightly yellowish or lightly brownish. Besides these wholly colourless or hardly coloured diamonds there are stones quite yellow or more or less brown; sometimes they are clear green, or with a blue tinge. Green, blue, or quite red stones are more rare. At last, besides these quite transparent stones, there is, too, a certain proportion of stones with a muddled crystallisation or with a crystallisation complicated by a grey colour more or less strong, and they are also "boort" (industrial diamonds these). The size of the stones varies greatly: from very small stones (thirty are required to make a carat) up to stones of 18 and even 20 carats, the latter being the biggest found up to now in the Kasai basin. The stones average ten or twelve to the carat (200 milligrammes or the fifth of a gramme). At present the source of the Kasai alluvial diamonds is unknown, and it may be that it will never be exactly known.

The Cyanide Process.*--III

STORY OF ITS DEVELOPMENT.

How Inventive Genius was Inadequately Rewarded.

(By Alfred James.)

The demonstration plant, referred to previously, was erected by arrangement with the Salisbury Company, at its battery. The enthusiastic encouragement given to the process by the manager, R. A. Michell, is gratefully remembered by those who were naturally very appreciative of the slightest expression of approval in those early days. It is only fair to refer also to the attitude of the Press and to the value of the publicity and encouragement freely and cheerfully extended to the pioneer of the process. Dormer, of *The Star*; Rathbone, of the *Mining Journal*; Piet Davis, of Maritzburg, were towers of strength. They awoke the interest of the community, and, indeed, prepared the way for the subsequent adoption of the process.

I have had, naturally, much experience with the daily, the financial, and the technical Press in four of the five continents. Great publicity has been given at great length to my technical writings and to my work (whether I wished it or not), but never in all my professional career have I known a single instance of payment for Press services so generously and spontaneously rendered.

By April, 1890, the demonstration plant at the Salisbury was ready for action, and early in May Mr. MacArthur, whose presence it was considered would be of especial value to the syndicate at this juncture, arrived at Johannesburg, where the demonstration took place, the pioneer having first run 100 tons through the plant so as to have the staff acquainted with their duties and the plant running smoothly.

The success of the demonstration is well known. Later, in 1895, Hennen Jennings reminded me that the results then being obtained at the Crown Mines were precisely those obtained by him and J. R. Williams (afterwards famous for his successful process for treating slimes by decantation) in 1890 at the demonstration; but the fact remains that, excepting the manager (Mr. Michell) of the property on which the plant stood, no one adopted the process!

Inventors Must Overcome Prejudice in Favour of Old Processes.

This should be well considered and taken to heart by all persons fathering a new process, as it is just one of the difficulties by which an invention is faced. Practically every epoch-making invention is pronounced a failure at first, wherever exploited, and it is only the invaluable enthusiasm of the inventor and his financial associates which enables them to survive this adversity and ultimately to force the process on the industry.

The Gold Recovery Syndicate, which had contracted to purchase the patent rights, thus found itself, in the latter half of 1890, with no backing and no adherent other than Mr. Michell, but for whom the syndicate would have had the demonstration plant left on its hands. Mr. MacArthur had returned to Scotland, taking with him his cheque in payment of the plant, and it was left to the syndicate, with which was associated the pioneer, to take other and still more vigorous measures to force the adoption of the process. That these measures were taken was due mainly to the keenness and decision of W. W. Webster, who determined to spend his last penny, refusing to be discouraged, rather than fall short of complete success.

It was at this juncture that a Scotsman connected with one of the local banks came to their aid. Funds were thus obtained by which advantage could be taken of the liberal terms on which Hennen Jennings offered a block of valuable Robinson tailing, thereby enabling himself to obtain greater knowledge of the practical working of the process.

Up to this time the process had been described as for refractory ores and concentrates only. The demonstration was limited to the treatment of material of this nature. An installation was now designed by the pioneer for the treatment of tailing by percolation. This modification in the method of carrying out the process involved a change from the agitation of small charges in cylinders fitted with paddle agitators to the gravity percolation in large tanks of considerable quantities of material, and was so novel as to induce Mr. MacArthur's greatest friend on the Rand to state that the process was a new one and ought to be named jointly after MacArthur and the pioneer; but this suggestion never appealed to the latter.

The invention had been completely and thoroughly worked out by MacArthur and his associates; probably no invention has been placed before the public more completely and thoroughly developed. The fact that the carrying out of the invention, as originally put into practice, in Australia, New Zealand, America, and South Africa, had failed to induce a single adherent (other than Dr. Scheidel, with his small concentration plant at the Sylvia) to adopt the process, made it obvious that our *modus operandi* was wrong. The adoption of gravity percolation made the process commercially successful and of world-wide acceptance, spreading from South Africa to New Zealand and India, with later adoption in the United States and in Western Australia, where inappropriate methods of introduction had caused a setback.

The new plant at Johannesburg was built by Messrs. Tarry in December, 1890, under my supervision, being laid down according to the plan of operations carried out by Messrs. Webster (manager), Gaze, and Darling. The plant did not meet with the approval of the authorities in Glasgow, who had sent out a plan of a small (8ft. by 6 ft.) square Tharsis tank as one to be followed, and it gave me no little satisfaction to be able to reply, to a letter prognosticating failure, with an account of the great success of the plant. Within two months of the starting of operations the plant was showing a profit of over £2,000 a month on an original outlay of about £3,000, the African Gold Recovery

---

* "Engineering and Mining Journal."

Co. was formed, and Mr. MacArthur was sent out by the new company to arrange for the actual conduct of its operations.

Not even yet, however, was the process forced on the industry. The new company decided to continue the profitable operation of the treatment of tailings on its own account. New contracts were accordingly entered into with other companies, such as the Crown Reef and the Meyer and Charlton; and then at last the companies decided to adopt the process, and the fight was won.

Early Hardships of the Developers of the Process.

After five years' hard work, involving the training of many metallurgists, the erection of a cyanide manufacturing works to prevent the supply of cyanide to the mines being restricted, the dispatch of six expeditions, the fighting of two lawsuits, and the carrying out of much mechanical research, such as the use and effects of cyanide, alkalies, oxidizers, lead salts, and alkaline sulphides, the manufacture of cyanide by various processes, and the expenditure of over £100,000, an epoch making process of the greatest success has been forced on an industry.

It is only a fair conclusion to state that but for the expenditure of so much dourness and determination, of so much patience and encouragement, of so much business commonsense and foresight, and last, but not least, of so much capital, the discovery of MacArthur and the Forrests, and of their financial associate, Morton, would not have been made available to the industry for many a year, but would have lain fallow as a non-pursued chimera with the unfollowed-up ideas of Faraday, Bagration, or the more practical processes of Rae and Simpson.

The Question of Reward to the Pioneers.

And what of the reward offered by the industry as remuneration for so much enterprise, effort, and success? This question can scarcely be left to the industry. As to whether, after the result of the action taken by them—a result which, in view of the decision of the English Appeal Court, would have conceivably have been different had the Transvaal been at that time a British Colony, with right of appeal to the Privy Council—the mine owners might have felt called on to make some remuneration to the patent owners who had so fostered the introduction of the process, one can understand that after the expense, worry, bitterness, and exhaustion of a prolonged fight a feeling of relief at the result would predominate over all other sentiments. But surely it behoves the industry in its own interest to see that the result of the challenging of the MacArthur-Forrest patent is not to deter other inventors from putting forward their methods in the Transvaal. Such a result appears to have already involved the Witwatersrand in an annual loss far greater than the royalty it would have been necessary to pay had it not challenged the patent.

Why Not a Pension Fund?

There is one other matter which arises from the consideration of the effect of the severing of the interest of the pioneer group in a new process. Those who have grown grey in the working of the new process may feel that they have not the prospect of a retiring pension for their old age. Such a thing might have been relied on had a pioneer company still continued its ownership to the usual period of patent expiry. Nine years ago I suggested that the greatest goldfield in the world could be large-hearted and could perhaps pardon a suggestion that a small contribution from the mines of a fraction of what they had saved in patent royalties would suffice to establish a fund, called, say, the Cyanide Pioneers' Pension Fund, from which all cyanide pioneers in charge of plants from the earliest days of the process (first plants at each mine) who continued in the industry, not necessarily as cyaniders (they might have since become managing directors, consulting metallurgists, reduction officers, samplers, or assayers), might on their retiring after 20 years' service, become entitled to draw a pension of, let it be assumed, £300 a year for life. I regret that my proposition met so little response on the part of the South African mine controllers. I trust to live long enough to see it adopted.

It has never been realised that the industry, the world over, has had the free use of an apparatus which has stood the test of time, and is still used practically unaltered, but which was designed for and first used on the Robinson tailing plant. This box could have been patented. Originally, gold was precipitated from its cyanide solution by zinc shavings placed in chloride of calcium tubes; subsequently earthenware pots were used for a similar purpose. For the Salisbury demonstration plant teak boxes of four compartments were used, each compartment having a cast-iron box, with perforated bottom, which could easily be withdrawn to facilitate the cleaning-up operations for demonstration purposes. For the Robinson plant, however, a box of novel type was specially invented. It had a series of compartments with a space for the inflowing solution, which was conducted by a baffle to the bottom of a large compartment in which was placed an easily removable tray on which the zinc shavings rested, and up through which the gold solution percolated, with a downward movement through baffle channels only.

At the bottom of each compartment was a space for gold precipitate, and connected to the bottom of each compartment was a pipe, or channel, for drainage and cleaning-up purposes. For a generation that box, except that it is now frequently made of steel, has been well nigh universally adopted for the recovery of the precious metal. A royalty of £20 a box—such as is freely given for a cone or tube-mill feeder—would not have been at all excessive. Probably ten thousand of such boxes have been used on the Witwatersrand alone; a small gratuity or recognition per box placed to the credit of a Cyanide Pioneers' Fund should have sufficed to make comfortable, for the period of their lives, those pioneers (first men on first plants of mines only) who may now find themselves seeking rest after the completion of their 30 years' toil.

Aurora West.

The position of this company, which has been attracting attention of late, is best explained by the following concluding passage from the speech of the Chairman at the recent annual meeting: "Taking into consideration the possibility of reduced costs which, as a result of post-strike reorganisation, it seems reasonable to assume, and the more favourable developments in the lower levels of your mine, the outlook for your company seems more hopeful than it has been for some years past, always provided that a reasonable supply of native labour can be maintained."

INVESTORS' DIARY.

Forthcoming Company Meetings.

(a) Annual general meeting; (s) special or extraordinary general meeting.

Meetings will be held in Johannesburg unless otherwise stated.

Aug. 30.—Diamond Fields of Africa Exploring Co., Ltd. (a), 3 p.m.

Sept. 20.—Swaziland Tin, Ltd. (a), 12 noon.

Sept. 21.—Transvaal Gold Mining Estates.

Sept. 21.—General Mining and Finance Corporation, Ltd., (a), 11 a.m.

Sept. 29.—Simmer and Jack Prop. Mines (a), 11.30 a.m.

Nov. 17.—Sub Nigel (a), 11.30 a.m.

Dec. 14.—Glynn's Lydenburg, Ltd. (a), 3.30 p.m.

To Lower your Operating Costs:

A Lubrication Audit

Business to-day protects itself against waste and inefficient methods—by audit.

An audit gives an exact picture of present conditions, and points the way to improvement.

We would like to call to your attention the possibilities of a Lubrication Audit in your plant.

See details in column.

Only a Lubrication Audit can give you full information, and open the way to new economies which will soon be reflected in lower operating costs.

Present industrial conditions make it urgent that you take this step toward improved results at once. Ask our nearest branch to-day about the Lubrication Audit.

GARGOYLE

Lubricants

A grade for each type of service

THE LUBRICATION AUDIT

Explained Step by Step (in condensed outline)

INSPECTION :—A thoroughly experienced Vacum Oil Company of S.A. Limited, representative in co-operation with your plant engineer or superintendent makes a careful survey and record of your mechanical equipment and operating conditions.

RECOMMENDATIONS: —We later specify in a written report, the correct oil and the correct application of the oil for the efficient and economical operation of each engine and machine. This report is based on :—

(1). The inspection of the machines in your plant.
(2). Your operating conditions.
(3). Our 25 years of lubricating experience witn all types of mechanical equipment under all kinds of operating conditions.
(4). The outstanding experience of the Vacuum Oil Company in manufacturing oils for every lubricating need.

CHECKING :—If, following our recommendations in this audit, you instal our oils, periodical calls will be made to check up the continuance of the desired results.
For the above Free Service address our nearest branch office.

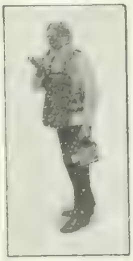
BRANCH OFFICES:

Cape Town **Johannesburg** **Pretoria**
Kimberley **Bloemfontein** **Mossel Bay**
Port Elizabeth **East London** **Durban**
Lourenco Marques.

VACUUM OIL COMPANY OF SOUTH AFRICA, LTD.

Approved by Mines Dept., Home Office and Board of Trade

THE "PROTO"



SELF-CONTAINED OXYGEN BREATHING APPARATUS

for Rescue and Recovery work in Mines after Explosions, etc.

ADOPTED BY ALL THE PRINCIPAL RESCUE STATIONS IN THE UNITED KINGDOM, AND BY MANY COLONIAL AND FOREIGN GOVERNMENTS

SMOKE HELMETS

of various patterns.

For Gob Fires and other Short distance work in Collieries.
Simple. Light. Portable.

THE "NOVITA" OXYGEN RESUSCITATION APPARATUS FOR THE APPARENTLY ASPHYXIATED.

RESPIRATORS FOR ALL PURPOSES. OXYGEN COMPRESSION PUMPS. GAS ANALYSIS APPARATUS. ELECTRIC LAMPS, Etc.

SIEBE, GORMAN & CO., LTD. "NEPTUNE" WORKS and
187, WESTMINSTER BRIDGE ROAD, LONDON, S.E.1, ENGLAND.

[illegible]

£1,000,000,000.

In commemoration of the production in the Union of South Africa of minerals to the aggregate value of One thousand million pounds sterling,

The South African Mining and Engineering Journal

HAVE NOW IN PREPARATION A

SPECIAL YEAR BOOK

FOR 1922-23.

Which will be a complete illustrated work of reference, containing all facts and figures relating to the South African Mining Industry, its technology and trade, and including valuable maps, diagrams, mine plans and statistical annexures, compiled by experts.

In 20 parts complete in one large and handsomely produced volume.

PRICE 10/6. POSTAGE 1/6 EXTRA.

Order early from the Publishers:

S.A. MINING & ENGINEERING JOURNAL,
176-180, Stock Exchange Building,
Telephone 913. P.O. Box 963.
JOHANNESBURG.

TRADE AND INDUSTRIES SECTION.

Week in the Mining Material and Engineering Trades.

BUSINESS STILL IN THE DOLDRUMS—COMMERCIAL VIEWS ON POSITION — IRON AND STEEL—TIMBER AND BUILDING MATERIALS—HUME PIPE INDUSTRY—ELECTRICAL GOODS—AMERICAN NOTES — NEW TARIFF — STRIKE SITUATION — BRITISH TRADE—BENGUELLA RAILWAY—PRIME MINISTER'S OPTIMISM ON FUTURE OF UNION—KOSI BAY—WIRELESS—METAL MARKET.

General.

Business has again been disappointing and of an invertebrate nature this week; the Commercial Exchange has been duller than for many months, and generally things in the mining material section have been—as succinctly stated by the head of a leading importing firm—dead. This shrewd merchant, however, after giving expression to this verdict—corroborated fully by others—was not slow to state his conviction that the present atrophied state of business was and could only be, in view of all indications, of a temporary nature, and must assuredly soon give place to better conditions. He was absolutely certain that the Rand was in for a good time both as regards business activities and general conditions, but exactly when that time would arrive it was difficult to forecast—perhaps, however, before some of us imagined. In the meantime, we had, of course, to make the best of the present trying circumstances, which might unfortunately spell ruin to many.

Business has been falling away again on the Commercial Exchange, said another commercial magnate interviewed this week. It is, of course, the end of the month, he stated; but it is difficult to explain how, with a bigger purchasing power on the part of the mines to-day—in the shape of larger tonnage being crushed along the Reef—considerably in excess of that treated for months,and bigger profits being earned month by month—the demands from the mines for mining material had fallen so far below normal and general expectations. But the mines' demands were bound to come eventually; they appeared still to be depleting old reserve stocks, to which, of course, there was a natural limit, which, when reached, must mean big purchases from merchants. The present holding back of orders from the mines, while undoubtedly meaning great loss to the mining and general community at the moment, might eventually prove not an unmixed evil to importers later on. Such a policy on their part might, he thought, while very trying to merchants at the moment, still be a sound one for all concerned as soon as we shall have reached bedrock.

Despite the present depression the general opinion is that the gold mining industry is expanding and doing better than for years, and likely to do better in the future. This prominent commercial man drew attention to the fact that in the developing stage the spending power of the mines is not so great as when they come to the producing stage, and until a mine has arrived at the producing stage and is fully equipped, amounts spent thereon are looked upon practically as wasted. He still thought, the present dullness notwithstanding, there was a great improvement in the outlook of the industry in regard to better business conditions. We might have to wait still for a time for that improvement to eventuate, but the foundations for such improvement were undoubtedly there, and to observant men could not be overlooked. Meanwhile, of course, the statement of the President of the Chamber of Commerce regarding the lesser spending power of the community was rather disconcerting, and merchants were bound to feel such loss of ready money—have, indeed, felt it for months—but this disability should soon be removed. There was to-day little German material coming into the country, due to the internal conditions prevailing in that Republic. This, however, was all to the good of British and American firms; eighteen months ago the boot was on the other leg, but now Britain was getting her chance.

Prices remain much about the same, with, however, a firmer tendency in timber, in view of the present scarcity of most lines; 3 x 9 deals are practically unobtainable in town. Shipments of these and of other kinds are, however, expected here within a month. The building trade is fairly active and, indeed, the only moving feature to-day. Big things are expected in this section very shortly. The spirit in the sharemarket now being witnessed seems always to synchronise with active operations in building operations, he said, many holders of shares are at last able to realise at fair prices, preferring to divert their activities to properties—for a time.

In the opinion of far-seeing men the next few months should see a big rise in stocks—in the wake of which things here generally go ahead. There is not much to report in the way of a change of prices in respect of mining material, iron and steel, etc.

The endorsement by the workers, by ballot, of the provisional agreement arrived at between their representatives and the Mining Industry Board is now being eagerly looked forward to. Should the twelve months' experimental agreement between the Chamber of Mines and the unions be adopted—and, according to those in the know, there is little doubt about it—this conciliation scheme should go a long way towards helping the commercial community out of its present rut and preventing that friction between workers and the Chamber of Mines which has characterised their relationship in the past.

Things are still at sixes and sevens in regard to the Reparations question and inter-Allied Debts, and the latest pronouncement of M. Poincare respecting the former has naturally given rise to grave anxiety in Britain and elsewhere. In the meantime a joint English and French mission, representing the Reparations Commission, has arrived in Berlin on a visit of investigation. Until some satisfactory breakaway from the present deadlock shall be found it is impossible to look for any improvement in the world's commercial conditions.

Iron and Steel.

"This has been the quietest week I have experienced for a long while," said a very prominent mining material importer on Thursday last. Very little indeed has been done on the Commercial Exchange. On one day in especial during the period under review only seven inquiries were listed, and, although this merchant had quoted under cost, he had not succeeded in obtaining a single order. Further comment on the present position of mining material business appears to be unnecessary.

Latest Local Quotations.—Dunswart iron, 18s. to 23s. per 100 lb. Union Steel Corporation, Limited, 19s. to 22s. 6d. Imported iron and steel, flats, rounds and squares, from 25s. 6d. to 35s.; channels and joists, 25s. to 28s.; imported angles, 27s. to 31s. 6d.; tee iron, 27s. 6d.; shafting, ⅜ in. down to 3-16 in., 7½d. to 9d [illegible] in 1¼ in., 6¼d.; 1¼ in. to 6 in., 4½d.; steel plates, 1 16. [illegible] in. [illegible] 21s. 6d.; 10 x 5 and larger, 25s.; [illegible] spring steel, 7d. to 8½d. [illegible] bolts and nuts, hexagon, ⅜, 7 5-16d. lb.; ½ in., ⅝ and ¾, 33s. 6d. to [illegible] per 100 lb.; hexagon nuts, [illegible] ½ in., ⅝ and ¾, 7½d.; fish plate bolts and nuts, ⅜ in., 6d. lb.; ½ in, 4d. to 4¼d.; ⅜ in. and ¾ in., 3¾d.; dog spikes, 32s. 6d. per 100 lb.; rivets, ¼ in., 6 5-16d.; ⅜ in., 5d.; ½ in and ⅝ in., 37s. 6d. to 40s. per 100 lb.; ⅝ in., 50s.; brass rods, ¼ in., 1s. 3d.; ⅜ in., 1s. 6d.; ½ in., 1s.; hexagon brass rods, 1d. lb. extra; copper rods, ⅜ in., 1s. 9d.; ½ in., 1s. 10d.; ⅝ and upwards, 1s. 9d. lb.; tool steel, 2s. 11d. to 3s. 3d.; brass sheets, 1s. 10d. to 2s. lb.; copper sheets, ¼ in. to 18 gauge, 1s 10d. lb.; 20 gauge, 1s. 11d.; 22 gauge to 28 gauge, 2s. lb.; firebox copper, 2s. 1d. lb.; copper tubes, ¼ in., 3s.; ⅜ to ⅝ in., 2s. 4d.; ¾ to 4½ in., from 2s. to 2s. 2d. lb.; phosphor tin, 2s. 7d.; ingot tin (Lamb & Flag), 1s. 9d. lb.; ingot lead £28 per ton; drill steel, 5½d.; hollow, 7d. to 8d.; 1¼ in., 6½d. to 8d.; wire nails, 30s. to 35s.; shovels, 27s. 6d. to 46s. 6d. doz.; wheelbarrows, 37s. 6d. to 42s. 6d.; picks, 32s. 6d. to 40s.; pick handles, 25s. to 30s.; hammer handles, 14 in., 4s. 10d. to 5s.; 18 in., 7s.; 24 in., 8s. 6d. to 10s. 6d.; 30 in., 15s. to 18s.; 36 in., 50s.; piping, ¾ in., black, 4¾d.; 1 in., 5¾d.; 2 in., 1s. 1d.; galvanised, ¾ in., 5d.; 1 in., 7¾d.; 2 in, 1s. 7d.; ¾ in. steam, 5¾d.; 1 in., 8d.; 2 in., 1s. 6d.; barbed wire, "Shorthorn," 69 lb., 13⅜ gauge, 19s. 6d. to 21s. per coil; plain galvanised fencing wires, No. 8 gauge, 100 lb. coils, 21s. 6d. per coil; No. 10 gauge, 100 lb. coils, 24s. 6d. per coil; No. 12 gauge, 100 lb. coils, 26s. 6d. per coil; bulb tee fencing standards, 14 lb., 19s. 6d. per dozen; 12 lb., 23s. 6d. per dozen; black baling wire, 14 gauge, 19s. per coil, 100 lb.; 12 gauge barbed wire, 22s. per coil, 96 lb.; plain wire, No. 8 galvanised, 21s. per coil, 100 lb.; fencing standards, 21s. for 12's and 24s. for 11's; droppers, 40s. per 100; screening, 3s. to 9s. 6d. per square yard; cyanide, 1s. 6d.; zinc shavings, 1s. per lb.

Secondhand Machinery.

With regard to the second-hand machinery market, there are still a few orders about from the coast and the Free State. One broker is now assembling a big engine and boiler. There is another mine on the West Rand which has just been taken up by a syndicate, which is now in the market purchasing its requirements. We understand the syndicate are spending £5,000 in machinery alone. This will naturally create a little competition in the town, as well as absorb stock on the Rand. There is no denying the fact that the West Rand series particularly, before many months are over, will be well patronised by numbers of syndicates formed in town, mostly by working men. One party the writer knows of has just started on a 10-stamp proposition out West; in fact, on a portion of one of the old defunct companies, and with very little capital; after working for about a fortnight he was able to deposit 120ozs. of gold in the bank. Propositions of this kind, worked by partners entirely, can undoubtedly be made to pay. This all spells a better demand for machinery, although there is not much knocking about just now, the market having been drained considerably during the past twelve months not only by mining syndicates but by industrial concerns, and some of the yards have become depleted of saleable requirements.

Regarding the very important matter of syndicates and [illegible] propositions on the West Rand, which is bound to affect the community favourably very soon, a prominent commercial man this week said that some 400 claims in Roodepoort held by a syndicate in town, of which he was a member, had been taken over on option this week, the "optioneer" to spend some £5,000 on sinking shafts within six months, and should he elect to take over the ground to pay £250 per claim. This is only a slight indication of the activity now going on on the West Rand (not to speak of other districts), which is bound to make itself felt in the shape of increased machinery purchases and general improvement of conditions all round.

Engineering Works.

There is little change to report this week, business being fairly well maintained, with no prominent features. Engineers are, however, optimistic as to the future.

According to the monthly bulletin of Union statistics for August, engineering works numbered 625, with 17,693 whites and 17,818 other employes; the salaries paid were £5,755,152 and £874,590 respectively. The value of the South African materials used was £243,171, and the total value of the output £18,517,381.

Timber and Building Materials.

Business in these during the past week has been quite good, all merchants reporting a fairly busy time. 3 by 9 deals are still getting scarcer and commanding a price above the standard one quoted, in fact practically any price can be obtained for them to-day. Another month, however, should see the present scarcity in these and other kinds of timber relieved.

The building trade is, according to one of our foremost brokers, going ahead, with a number of private dwellings going up and also some big buildings in town, together with important alterations in premises. In his opinion, it would not be long before some very important operations in the building line came along. At any rate, things at present were very promising and better than for many months past. Plasterers still continue scarce and, as a matter of fact, there is at present no plethora of skilled building employees.

Timber Prices.—3 x 9 deals, up to 18 teens 1s., over 18 teens, 1s. 1d.; scantlings, 10½d.; beaver boards, 4d.; floorings, 6d. to 6¼d.; ceilings, 4¼d. to 4½d.; Oregon, 5s. 6d. a cube; pitch pine, 7s. 6d. to 8s.; corrugated iron, 7⅞d. to 8⅞d. Furniture timber: Burmah teak, 16s. to 17s. 6d. per cube, Johannesburg; American oak, 1 in., 10½d.; 1½ in., 11d.; 2 in., 1s. at coast; Japanese oak, 11½d. at coast; West African mahogany, 1 in. to 4 in. thick, 27s. to 28s. per cube, at coast; Rhodesian mahogany, 9s. per cubic foot at mills; Honduras mahogany, 30s. per cubic foot; American yellow pine, 1s. 4d. per foot of 1 x 12 here; American pine shelving, 10d. per ft.; 3-ply wood, 3 m.m. up to 5 m.m., alder and birch, 4d. to 6½d. per sq. ft.; oak and teak, 3-ply, 10d. per sq. ft. Prices per sq. ft.; oak and teak, 3-ply, 10d. per sq. ft. Prices for bricks are about the same, viz.: Klompje bricks, 25s. per 100 at works; fire-bricks, £10 per 1,000 at works; mixed, 70s.; wire-cuts, £4 10s. to £5; and £5 for pressed per 1,000, at kilns; columns from 20s. to 30s., according to size; roofing tiles, Marseilles, £25 per 1,000 at the works; chimney pots, 12 in., 7s. 6d.; 15 in., 9s.; 18 in., 10s. 6d.; dry red oxide, 16s. per 100 lbs.; white lime, 7s.; blue plaster lime, 5s. 3d.; blue lime, 1s. 3d.; cement, 10s. 3d. a bag; damp course and roofing, 36s. to 54s. for 1 to 3-ply.

Secondhand Iron and Timber.

The slight improvement in the second-hand iron and timber trade reported last week has not increased to any marked extent, but, on the other hand, has not receded, and dealers seem hopeful as to the immediate future. Prices are 5d. to 6d. for iron and 7d. to 8d. for timber, with stocks not too abundant.

Union's Big Timber Opportunity.

In speaking on afforestation at the Transvaal Agricultural Union Congress at Pretoria last week, Sir Thomas Smartt emphasised the importance of building up the timber asset, which was of great national importance. The Government had, as in other important directions, embarked upon a more extended policy, the rate for the Department being £300,000, and it was superintending nearly 600,000 acres of indigenous forests. There was, according to importation figures, a great shortage in soft wood timbers, which were greatly needed for building purposes. The Minister said that, in view of the manner in which the timber of the world was being worked out, it was absolutely necessary for South Africa to build up a national asset. He said there was now established at the railway workshops a seasoning kiln, which enabled hard woods, which previously could not be used owing to their warping, to be used now as moulds for railway castings, and other timbers, such as gums, to be worked up into planks, telegraph poles, etc.

Prominent Merchant's Views on Present and Future Conditions.

"Everything points to an early revival," said a responsible merchant this week, in the course of an interesting chat, and the Government are going to spend a lot of money in the expansion of railways. The position of the country is undoubtedly sounder than for a long time past; the losses sustained by the farmers have now been made up or written off, but we have at present an excessive competition, which will probably retard the revival—in the sense of people feeling it. We are beginning to do more business than before, but there is no profit in it—simply cutting one against the other, and he thought it was possible that it would take another six to nine months before we could say that the recovery had come in material improvement. There was no doubt whatever that we had reached bed-rock, and any change now must be for the better. He stated that individually his firm was feeling particularly the effect of Portuguese finances, but that, of course, did not affect the other business in the Union. He really considered business was bound to improve in from six to nine months, and be on a much sounder basis than it is to-day. Of course, the European situation is keeping us back to some extent. We could export far greater quantities of agricultural produce from this country if the markets were open at Home, but they are not: there is no indication at present when they will be, but everything is right for it. He thought South Africa had weathered the storm, had taken its knock, and is now all ready to make a start for recovery; but, of course, a lot depends on oversea conditions. The mines are undoubtedly doing better than for a long time, but he, personally, thought that if America came to her senses and agreed to the British suggestion of cancelling war debts, then perhaps the price of gold would revert to normal, 85s. instead of 92s. There was, in his opinion, no question whatever, that the British Government in the Balfour Note had hit the nail on the head in the suggestion that each country should wipe off its war claims, which would undoubtedly stabilise financial and commercial conditions and give the necessary impetus to the world's business recovery. In his opinion, there was no question whatever that in respect of finance Britain leads the world.

The Hume Pipe Industry.

This company has declared its first dividend. A brochure which is published by the company and which appears in this issue, gives a list of some of the larger orders it has executed within the Union. The figures given are somewhat surprising, as few people realise the extensive nature of the operations carried out at the company's factory at Germiston—a perusal of the list of sales of the "Hume" reinforced concrete pipes recently effected will show adequately the great advance being made in this important local industry.

Electrical Goods.

Things, said an important dealer this week, remain much about the same in the electrical wares section. Business in town and country is quite fair, but not going at the rate expected about this time; fair orders and inquiries were coming in from outside parts of the Union, which all lead one to hope that better times were not far distant. Prices generally are firming up; lamps are very low just now, but this dealer did not expect any further reduction in them, as quotations from Germany and Austria were fully 20 per cent. higher than before, and lamps were not too plentiful in view of contracts about to be given out. No change in prices has to be reported from England. Benoni has changed over in electric current from the Kleinfontein Power Co. to the Transvaal and Victoria Falls Power Co.

American Notes.

New Tariff Bill.—It is announced by cable from Washington that the Senate has passed the Tariff Bill by 48 votes to 25, after a debate which lasted four months. The Bill now goes before a conference of members of both Houses. The highest customs duties in the history of the United States, which in many cases would act as an effective embargo, are provided for in the new Tariff Bill. The increases are tremendous in comparison with the Underwood tariff. The prospects of the new Tariff Bill being finally adopted before the Congressional elections in November are, it is said, remote.

Strike Situation.—This has altered very materially for the better since our last notes, and resumption of bituminous coal production is expected immediately. A settlement of the railway strike is also hoped for shortly.

Canadian Railway Strike.—Disregarding threats of a strike, the managements of the Canadian railways have reduced the wages of the shop men.

Direct Steamer Service with the United States.

The United States Shipping Board Emergency Fleet Corporation, operated by the Mallory Transport Lines of New York, will, it is announced, provide the Union with a regular service of steamers between New York, Boston, Philadelphia and Capetown, which, if inducement offers, will run to the East Coast as far as Beira. At present six steamers will be employed capable of carrying 60,000 to 75,000 cases of oil each, together with a quantity of general cargo.

Rubber.

According to the *Financier*, a proposal is afoot in America to form a corporation, called the Rubber Plantations, Ltd., registered in London, with an authorised capital of £50,000,000, to acquire rubber estates in each of the rubber-growing countries.

America's Coal Industry.

A Bill has been introduced in the House of Representatives, Washington, to carry out President Harding's suggestion for sweeping investigations into the coal industry. A Committee of nine experts has been appointed, to report in January next.

British Trade Revival.

Latest cable reports from London report improved trade conditions in Britain. Textiles and raw hides are advancing, and coal is booming. Unemployment, though still serious, is gradually declining. The shipbuilding industry is its worst case, and is reacting on the iron, steel, coal and engineering industries.

Benguella Railway.

Anxiety is expressed in financial circles in Britain that Britain may lose control of the Benguella Railway in consequence of the Trade Facilities Advisory Committee recently refusing an application for a Government guarantee for the capital required to complete the undertaking.

Negotiations are now being made to raise the necessary funds in America, and should these prove successful the result is likely to be that orders for railway material and stores, amounting to £3,500,000, and further orders at the rate of £600,000 per annum when the railway is fully operating, will be placed there instead of in Great Britain.

Prime Minister Optimistic as to Future of Union.

In a speech to a number of representative citizens of Pietersburg, the Prime Minister, on his return from Rhodesia last Saturday, was very optimistic as to the future of the Union. He assured his hearers that the future railway to the north would pass through Pietersburg and Louis Trichardt. He was convinced that very great developments would take place in Rhodesia in the future. General Smuts, in reviewing the general position of the Union, said he saw undoubted signs of improvement and that a considerable expansion in the Rand mining industry, in view of the more settled conditions now prevailing, was imminent. The Messina Mine was about to resume operations, and he was expressed that copper mining in Rhodesia would also be undertaken in the very near future, all of which would of course help to solve the unemployment question.

Kosi Bay.

Sir George Cunningham Buchanan, the harbour expert engaged by the Union Government to examine and report upon the possibilities of Kosi Bay as a harbour, arrived in Capetown last Monday and has now arrived in Johannesburg en route to his destination.

Union Railways.

Railway earnings for the week ended August 12 totalled £881,503, being £28,207 under the estimate. The total earnings from April 1 to August 12 were £7,366,575, which is £[illegible] below the estimate for that period.

Union's Food Costs.

These have declined, according to the official census and statistical report, during July nearly 2 per cent.

British Wages Reduction.

Mr. J. R. Clynes, M.P., has recently stated that the reduction in the weekly wages of about 6,000,000 workers amounted to nearly £10,000,000.

Shipping Statistics.

According to Lloyds' Register Book, published towards the end of last month, it appears that while in 1914 nearly 44½ per cent. of the world's seagoing steam tonnage was under the British flag, to-day's percentage is only 33½. Germany will in the near future possess about half the tonnage she had before the war, most of it new and highly efficient.

Marconi Wireless Company.

Presiding at the annual meeting of this company, the Chairman, Signor Marconi, announced that although conditions during the past year had been unprecedented, a profit of £275,000 had been made, enabling a dividend of 10 per cent. on the ordinary shares to be paid. Signor Marconi announced the opening of wireless services to all parts of the world in the immediate future.

The Postmaster-General, London, having announced the commencement of broadcasting, a rapid spread of the system in England is confidently predicted, thousands of wireless receiving sets having been purchased. Signor Marconi predicts an enormous development of the new service.

Big Hungarian Strike.

Advices from Budapest state that 40,000 metal workers have gone out on strike and have been joined by a large number of men in other industries.

Metal Market.

London quotations, August 21: Standard copper, £63 17s. 6d. cash, £64 forward; electrolytic copper, £69 15s. cash, £70 15s. forward; standard tin, £161 5s. cash and forward; foreign lead, £24 15s. cash, £23 17s. 6d. forward; quicksilver, £11 15s.; bar silver, 35d. per oz.; bar gold, 92s. per oz.

Hume Pipe Dividend.

This company has declared its first dividend, at the rate of 1s. per share to shareholders registered on September 7.

The Week's Meetings.

VEREENIGING ESTATES.

The twenty-third ordinary general meeting of shareholders, was held at Lewis and Marks' Building, Johannesburg, on Saturday, August 19, 1922, at 11 a.m.

The Chairman, in moving that the directors' report and accounts for the year ended December 31, 1921, be adopted, said:—

The Chairman's Speech.

Mr. Isaac Lewis, your Chairman, is, I regret, unable to preside to-day, as he is in London in connection with business that may result in important developments at Vereeniging.

The directors' report and the audited statement of accounts for the year ended December 31, 1921, have been in your hands some months, and I presume you will as usual wish to take them as read. You will see from the accounts that the gross profit for the year 1921 was £31,164 13s. 11d., as compared with £55,639 13s. 7d. for the preceding year. This reduced profit of £24,474 19s. 8d. as compared with the year 1920 was due almost entirely to the abnormal slump in the price of all farming produce, and to which I will refer more fully later.

On May 15 last your directors declared a dividend at the rate of 2½ per cent. free of South African Dividend Tax payable to all shareholders registered at May 31, 1922. This payment absorbed £25,631 3s. 10d., leaving an amount of £10,421 13s. carried forward to next balance sheet. You will be asked to confirm the directors' action in this matter.

While your directors regret that the amount of the dividend was reduced this year, they felt that the only sound policy was to write down the farming assets to such a figure as would secure for future years an assured profit, notwithstanding any depreciation that might take place in the value of such assets, and this was done.

Your company's position is sound, exceptionally sound, and a glance at the balance sheet will bear out what I say. This is not a concern to which temporary upheavals or times of depression can do permanent harm. The intrinsic value of your assets is incomparably greater than the figures at which they stand in the balance sheet.

The Company's Farms.

Your farms consist of 127,277 acres of land, and of this huge area your company owns the mineral as well as the surface rights of 126,121 acres. Three-fourths of this ground is computed by Dr. F. H. Hatch, M.Inst.C.E., to be coal bearing. Ten thousand three hundred acres are immediately available for irrigation.

Ten of these farms, aggregating 65,000 acres, are riparian, to the Vaal river, and two of them to the Klip and Zuikerboschrand rivers as well. The actual river frontage of your farms is over 50 miles.

The Rand Water Board hopes to close its barrage within a few months, and when this is done there will be 40 miles of perpetual navigable water, 18 miles below and 22 miles above Vereeniging. It is difficult to realise, and impossible to measure, the extent of the benefit of this water to the town of Vereeniging and to your company's farms. The potentialities of the district have been enormously increased.

The 659 erven are taken at the nominal value of £100 each, but are worth probably double that figure. Since the commencement of this year six erven have been sold for £1,550, an average of say £258 each.

The Forest Lands.

The forest, standing at £63,837 2s. 4d., represents little more than the actual cost of planting and maintaining it, less the revenue derived from thinnings, firewood, etc. For the first 27 years the capital account was reduced in this way. Only for the last two years has the revenue been treated as revenue. To emphasise my point, I may state that the actual amount spent on the forest for the five years ended December, 1919, was £12,354, but only £4,862 was charged to capital account, as £7,492 realised by the sale of firewood, etc., was credited to the forest capital account and not to revenue account, although, of course, the removal of this wood had to be carried out and actually enhanced the value of the trees.

The four and a quarter million trees stand in the balance sheet at about 3½d. each.

The Collieries.

The Cornelia Colliery equipment, standing at £115,832 2s. 3d., less the reserve account of £42,529 12s. 9d., giving a net figure of £73,302 9s. 6d., is about half its actual value to-day.

The Camp Colliery equipment stands at cost.

Your company, I would remind you, has an agreement with the Victoria Falls and Transvaal Power Company, Ltd., in perpetuity, to supply their Vereeniging power station with all its coal requirements at a price giving your company an agreed profit per ton. Last year that company purchased 452,216 tons of coal. Such an agreement, providing for an assured output, obviously largely increases the value of your collieries.

The other items are at cost or market values, whichever is the lower, and call for no special comment.

I think, therefore, you will agree with me when I say that although the dividend you received this year was smaller than you expected, yet your company's position is far stronger than a casual glance at the balance sheet discloses, and gives promise of a very much larger return to the shareholders in the near future.

Farming Operations.

As you will see from the profit and loss account, your farming operations show a loss of £3,390 14s. 8d. on the year's working. This was due to conditions not altogether unforeseen, but impossible to overcome. Not this company alone, not South Africa alone, but all over the world has the abnormal drop in the prices of farm produce been felt, while until quite recently farm wages, and the cost of farming implements, had dropped but slightly. Cattle, which during the war fetched £15 per head, and before the war £9 per head, recently were sold for as little as £5 per head

A slow but steady improvement is, however, now noticeable, and I am hopeful that before very long we shall be back to normal conditions again. It is with a view to stabilising profits, and ensuring the payment of a regular and increasing dividend, that your directors have decided to gradually discontinue farming operations in the Transvaal, and to lease the land to desirable tenants. These farms have been cut up into 600 acre plots with the requisite fencing and small well-built houses are being erected. The experiment was first tried with your farm "Vijffontein," which was divided into 11 portions of 600 acres each and one smaller portion of 200 acres. Although insufficient time has elapsed to complete even the fencing, eight of the 11 portions have already been leased to selected applicants.

The area it is proposed to lease in this manner is approximately 40,000 acres

Sheep Farming Prospects.

Your directors, believing that there is a great and profitable future for sheep farming in this country, are continuing this branch of its operations and are considering the advisability of extending it in the near future. We have at Schaapplaats, under the direction of Mr. J. Hosford, a flock of 15,000 merino sheep. For the past six or seven years drastic culling has been carried out with the result that to-day we have a flock second to none in South Africa. The average weight of wool per sheep shorn last clip was 7.93lb. and, although we cannot hope for a larger yield per sheep this year, there will be a still further improvement in quality and length of staple, and a larger yield in the aggregate owing to increases in the flock.

Your stud flock is doing remarkably well and 250 stud lambs were reared this season. There is a good demand for any stud rams we offer for sale.

To-day's prices for merino wool are satisfactory and leave a good margin of profit to the grower. The tendency is upward rather than downward, there being a general world shortage now things are gradually finding their true level.

Maccauvlei Forests and Orchards.

The past year was a particularly favourable one for the forests. The rainfall, which was nearly 10in. greater than the previous year, resulted in an enormously increased growth of the trees. The thinning of the trees consequently required greater attention, and this somewhat hampered the cutting of the larger trees. For the next two years cutting on a commercial scale will be somewhat slow, but from then onwards the quantity of timber handled will be very much greater.

The apple orchards are in a very flourishing condition, and will for the next five or six years continue to give yearly increasing profits as the younger trees come into bearing.

Up to the present the demand for the Maccauvlei apple exceeds the supply in South Africa, and there is accordingly no necessity to export, but it is interesting to note that only by this mail an eulogistic report was received from a large firm of Covent Garden importers on a few cases of our apples sent, with an invitation from the importer to ship a few hundred cases. The opinion was expressed that we should realise at least 18s. per case in London, but we are getting 25s. to 30s. per case here. We shall not, of course, export until conditions render it expedient to do so.

A net profit of over £7,000 was realised last year from the forest and orchards which unfortunately was more than lost in the growing of mealies on the other farms, and which, as I have already pointed out, will not recur.

Collieries.

Cornelia Colliery again produced a record output for the year; the sales tonnage being 646,994 tons, an increase of 1,582 sales tons over the previous record in the year 1920, although working six days less than that year. The all-round improvement in the capacity of the colliery is best shown by the series of outputs produced during recent years: 1912, 296,706 tons; 1913, 338,321; 1914, 445,496; 1915, 508,428; 1916, 538,363; 1917, 592,413; 1918, 581,296; 1919, 595,580; 1920, 645,412; 1921, 646,994.

It is unfortunate that the European strike, which commenced on January 1 and culminated in a revolution in the month of March, prevents any possibility of the record output being exceeded for this year, but I am glad to be able to state that throughout the whole of the strike period Cornelia Colliery was kept uninterruptedly at work under the supervision of the officials and the Vereeniging power station was kept fully supplied with coal; the tonnage produced being:—

	Sales, tons.
January	25,372
February ...	23,534
March	39,482

When the European workmen returned to duty the opportunity was taken to reorganise the working conditions of the mine with a view to regaining the efficiency that obtained previous to the introduction of the eight-hour day in May, 1919 and it is satisfactory to record that the colliery is now producing the pre-strike tonnage with a reduced complement of workmen.

The new district opened out on the eastern side of the S.A.R. main line proves that area of the Maccauvlei coalfield to be a very valuable asset, as, although the seam is contorted and heavily watered, the thickness of the seam is greater, and the calorific value higher than in any other portion of the pit. During the strike period practically the whole output of the colliery was worked from that area, and the workings are now being rapidly extended so that a largely increased tonnage will be produced in the future.

The colliery has an ample margin of electric and compressed air power for the winning of the coal and the pumping of the underground water, and now that the methods of working have been revised, resulting in largely increased efficiency, the working costs will be reduced and the operations will be conducted on a sounder basis.

The machinery and plant at Camp Colliery has been maintained in good condition, ready for a revival in trade, sufficient to justify the expenditure on the railway sidings, screening plant, workshops, etc., required to complete the equipment.

The Vereeniging Brick and Tile Company, Ltd.

The works of this company continue to maintain the high quality of goods manufactured. Owing to disturbing labour troubles, and the consequent high cost of manufacture, little profit was made last year.

The works have been thoroughly reorganised and electrical machinery has been installed in place of steam, resulting in increased outputs and a considerable reduction in working costs. A change has also been made in the management.

Vereeniging Township.

The progress of the industrial growth of the district is reflected in the activity in building which has been going on during the past year, and more especially so when it is remembered that this was during a time of general depression. Since January last year 45 dwelling houses have been erected in the Vereeniging Township at a cost of £46,000. One of the local hotels has been enlarged at a cost of £5,000 and the erection of the Town Hall, to cost £15,000, is proceeding.

The very handsome bridge over the Vaal River at Vereeniging, being erected by the Government, is practically completed, and in a month or two will be open for traffic. The bridge, as you are aware, connects the Orange Free State with the Transvaal and will be of enormous advantage to your company and the district generally. It will enable the Free State farmers to bring their grain by road to Vereeniging, which to-day is at times impracticable, and, as your company has a substantial interest in the Vereeniging Milling Company, Limited, your company will indirectly benefit. Both approaches to the bridge are on your company's property, the Transvaal one being adjacent to the works of the Union Steel Corporation, and the Free State one on your farm, "Maccauvlei." The bridge will considerably cheapen and facilitate the transport of timber and orchard produce from Maccauvlei Forest to Vereeniging Station.

I regret that owing to pressure of work I was reluctantly compelled last May to resign my position as joint managing director of your company, but I am retaining my seat on the board and shall continue to take an active interest in the affairs of the company. Mr. William Mallinson, who was the secretary of your company for 13 years, was appointed joint managing director with my late colleague, Mr. Roy Lewis, for a period of three years, and I feel safe in saying that your interests will be well looked after in the hands of these gentlemen.

Appreciation of Services.

The directors have again much pleasure in placing on record the Board's appreciation of the services rendered to the company by its officials and staff. The thanks of the shareholders are especially due to all members of the staff, and those other employes who at great sacrifice and personal risk stood by the company in the serious disturbances at the beginning of the year, and thus enabled all your operations and other industries to be carried on.

Following the experience gained in making Motor Car Tyres, we built an Air Hose on the same principles that enabled a tyre to withstand the gruelling of rough roads and high speeds.

Air Hose Made Like a Cord Tyre

That is why

4810 Air Hose

gives greater service—trouble-less service. Gives greater drilling efficiency. There's no flaking off of the rubber on the inside. In cheap hose the rubber flakes and enters the air ports of the drill, choking them and reducing the efficiency of the drill.

Every length of 4810 Air Hose is numbered, so that you may keep a close record of its life and performance.

This branding and numbering is eloquent evidence of the faith we have in 4810. It simply HAS to live up to its reputation.

United States Rubber Co.,
(S.A.) Limited.
Johannesburg, Cape Town and Durban.

EXPLOSIVES
FUSE
DETONATORS
ACIDS
CHEMICAL PRODUCTS
SHEEP DIP
CATTLE DIP
ETC., ETC.

CAPE EXPLOSIVES WORKS, Ltd.
P.O. DYNAMITE FACTORY,
SOMERSET WEST, C.P.

Offers Wanted for the following:

Two Multitubular Boilers,
16 x 8 (Mirrless Watson).

One New Steel Smoke Stack.
(In Sections), 75 ft. x 6 ft., with Base Plate.

WALTER S. BANTING, LTD.,
Box 1161, DURBAN.

NOW IN PREPARATION.

Special £1,000,000,000 Number

" S.A. Mining & Engineering Journal "
Year Book for 1922-23.

In 20 parts complete, in one large and handsomely produced volume.

PRICE 10/6. POSTAGE 1/6 EXTRA.

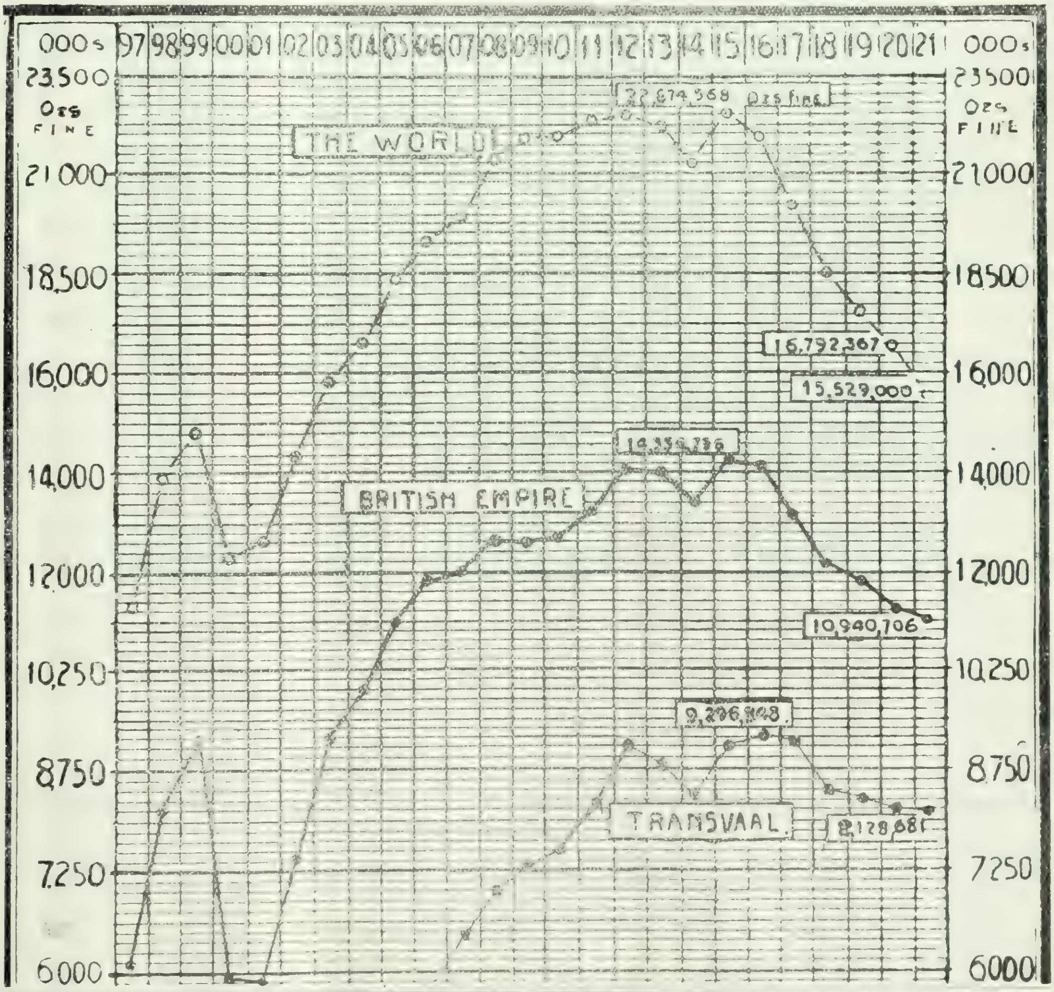
Order your copy now from the Publishers, 176 to 180, Stock Exchange Buildings. P.O. Box 963. Telephone 913. Johannesburg.

Outlook on the Rand—Diamonds; Production and Prospects—
S.A. Alkalis—Wankie By-Product Plant.

The South African
Mining & Engineering Journal
THE ONLY MINING AND ENGINEERING WEEKLY PUBLISHED IN AFRICA.
Established 1891.

Vol. XXXIII., Part I. JOHANNESBURG, TRANSVAAL, SATURDAY, SEPTEMBER 2, 1922. No. 1614

The World's Declining Gold Output.



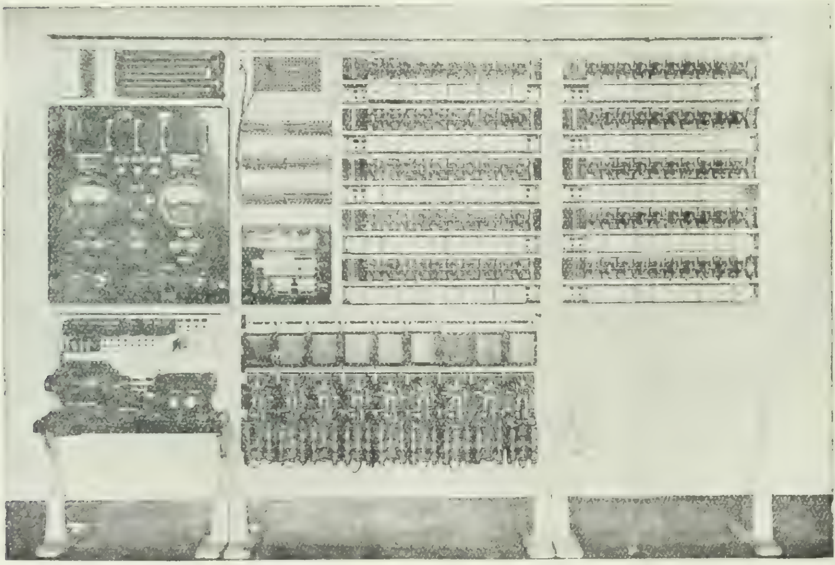
The above chart graphically illustrates the declining gold production of the world, of the British Empire and of the Transvaal since the highest point was touched in 1915. The economic importance of the matter is explained in an article in this issue.

SIEMENS BROTHERS

AUTOMATIC TELEPHONES

In addition to a number of
PUBLIC EXCHANGES FOR LARGE TOWNS
we have supplied scores of
PRIVATE AUTOMATIC EXCHANGES

Our EXPERIENCE is wide—Our SATISFIED CUSTOMERS numerous



PRIVATE AUTOMATIC EXCHANGE BOARD 100 Working Lines

CHEAP TO MAINTAIN—SIMPLE TO WORK

IMMEDIATE DELIVERY FROM LOCAL STOCK

Representatives in South Africa:

A. J. G. SIMPSON, A.M.I.E.E.	G. H. B. BERNARD, A.M.I.E.E.
African Life Buildings, 85, St. George's St., CAPE TOWN.	9-10, Cotts Buildings, Rissik and Fox Sts., JOHANNESBURG.
P.O. Box 239, Cape Town. Telephone 1202 Central.	P. O. Box 7404, Johannesburg. Telephone 408 Central.

Telegrams : "SIEMENS."

The World's Declining Gold Output.

TWENTY-FIVE YEARS' RISE AND FALL IN GOLD PRODUCTION AND ITS SIGNIFICANCE.

Our frontispiece this week illustrates in graphic form the rise and decline of the gold output of the world, the British Empire and the Transvaal during the last twenty five years. The chart suggests many important questions and will be found worthy of a study by all interested in the gold industry. Perhaps the two most striking features are, first, the extraordinary proportion of the world's entire output which is represented by the production of the British Empire, and, second, the great decrease in production since the outbreak of the Great War. A decline had certainly been taking place in certain countries—Australasia, for instance—before the war, but it was not until the war came that the output as a whole declined.

The Share of the British Empire.

In the year of maximum total production, 1915, when the world's output amounted to 22,674,568 oz. fine, the contribution of the British Empire was 14,354,756 oz., or 63·3 per cent.; for last year the percentage was still higher, 70·4. It should be added that some of the figures used for last year are still only estimates, though probably within a small fraction of being correct. Since the beginning of the present century the total gold production of the world to the end of last year, so far as is known, amounted to 417,062,129 oz. fine, of which total the British Empire provided 253,416,163 oz. fine, or 60·76 per cent.

The Decline.

The decline in the output of gold since 1915 is strikingly indicated on the chart. On last year's production the fall amounted to 7,145,568 oz. fine, or 31·5 per cent. This tremendous reduction is probably one of the most important factors that have entered into the economics of the world during these recent years. It is, perhaps, not too much to say that the phenomenon has not yet received anywhere the consideration which its economic importance demands. Various causes have, doubtless, contributed to this decline, but there can be little question that the chief is connected with labour. Russia presents a special and flagrant case. In 1910 Russia produced 1,721,161 oz. of gold (fine). According to the most competent authority we have at the moment, the Bureau of the United States Mint, the output of Russia in 1920 did not exceed a paltry 70,000 oz.—it was probably even smaller. If the present governing powers in Russia are sincere in their professed desire to restore the economic condition of their country they can begin by restoring the gold output to something like its pre-war amount; they would then have the means to buy a good many things which Russia sadly needs at this moment. They could do this rather [illegible] Allies; it is a matter entirely in their own hands.

The Transvaal's Share.

The chart shows that though the Transvaal's contribution to the world's production fell off it did not decline in anything like the same ratio [illegible] general or the British Empire. The special effort to produce gold for the prosecution of the war made in 1915 to 1918 is clearly shown; and the decline since then has been very gradual. The special reasons for the falling off in the Transvaal are too well known to our readers to need elaboration. They may be set down as exhaustion of the older, rich mines, greater average depth of workings, lower efficiency of labour, failure to establish extensions of Rand reefs either east or west, and, of course, the afore-mentioned special war effort to secure a maximum production by selective mining, which was in many cases continued during the period when the gold premium stood at its highest. The production curve for the Rand will show a further decline for the current year, owing to the partial cessation of work for the opening months, but by 1923 the present movement towards increased efficiency and larger production should be reflected in a sharp upward turn in the output line.

A London View of Rand Working Costs.

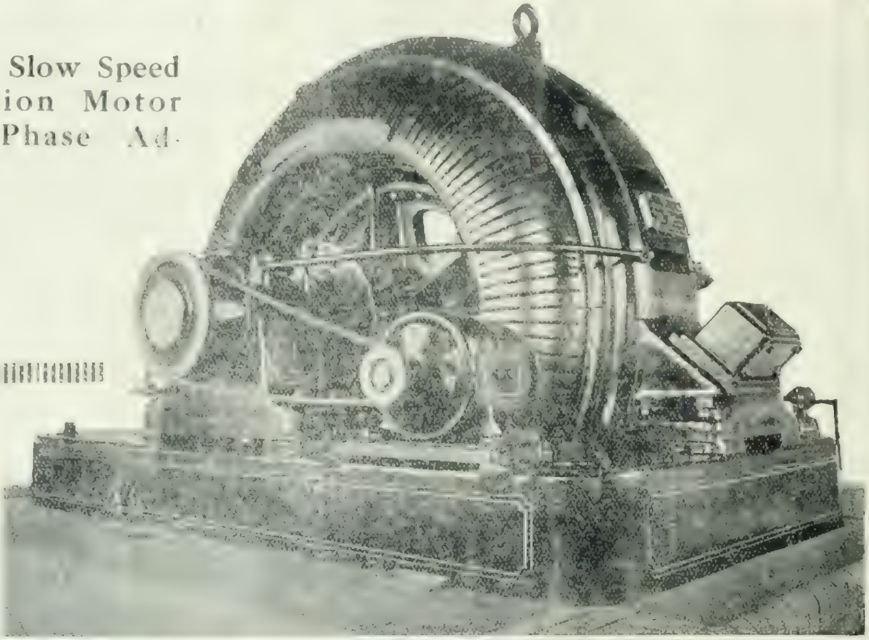
Elsewhere in this issue will be found an article dealing with the improved outlook for the Witwatersrand in which working costs and profits, etc., are analysed and contrasted with the figures for the pre-strike period. It may here be of interest to quote a London view of the improved position of the mines as recorded by our overseas contemporary, "The Financial News." In an issue to hand by this mail that newspaper states:

From the nature of the July returns from the producing mines of the Rand, nearly all of which are now to hand, it is quite evident that the industry is rapidly recovering from the effects of the disturbances early in the year. Not only are conditions approaching normal and profits increasing, but there are welcome signs of a distinct improvement in the matter of working costs. It has been customary hitherto to calculate these on the basis of so much per ton, but this is not an ideal method, as owing to variations in the tonnage treated and in the grade of the ore, possibly on any given mine from month to month no true comparison can be made. A better illustration of the position is afforded by a comparison of the cost per ounce of gold produced. In the following fairly representative list the cost per ounce for July is compared with that for December, 1921, the last clear month before the labour upheaval:—

	July, 1922.		Dec., 1921.	
	Total working cost. £	Cost per oz.	Total working cost. £	Cost per oz.
Geldenhuis Deep	58,699	84/9	66.375	99/8
Village Deep	64,720	73/3	73,796	95/8
Simmer and Jack	46.447	86/6	66,315	94/11
East Rand	129,963	85/-	151,143	93/5
Nourse Mines	57,748	78/3	68,757	92/7
Witwatersrand Deep	44,384	68/4	44,813	86/3
Robinson Deep	64,180	61/6	79,412	85/7
Crown Mines	214,666	68/7	237,911	79/1
Modder East	39,066	72/11	41,386	78/10
City Deep	106,927	55/7	118,007	68/10
Brakpan	73,359	55/9	75,371	66/9
Springs	51,570	53/8	60,166	64/-
Geduld	44,723	54/8	49.007	58/10
Modder B	68,984	40/2	76.764	53/7
Modderfontein	96,141	38/8	112,872	46/7
Modder Deep	40,374	34/6	43,872	39/6

It is not claimed that these are absolutely accurate figures, but those for last month are compiled from the respective monthly returns, and the December, 1921, figures are taken from the list published by the Transvaal Chamber of Mines. They certainly give some idea of the trend of costs on the Rand. Apart from the Luipaard's Vlei, the Geldenhuis Deep costs per ounce are the highest of any of the producing mines and the Modder Deep the lowest; the intermediate figures show some striking variations. It may be noted that the value of gold per fine ounce in July is given as 90s. to 92s., and it is now about 92s. 5d., whereas in December last it was about 94s. 6d., and its normal price is 84s. 11d. Thus, even if the "premium" were to disappear entirely it will be seen that many mines which were barely paying their way, or working at a loss, in December last are now placed upon an economic basis."

As we state in the larger article appearing in another portion of this issue, the figures for August are expected to reflect an even greater improvement and unless there are further serious financial and political complications in Europe the Kaffir market should respond still further to the disclosure in actual figures of the measure of improvement on the Reef.



G.E.C. Slow Speed Induction Motor with Phase Advancer.

Motors of Every Description

for every industrial purpose are manufactured by the General Electric Company, of England, who also make the necessary controlling gear.

Large stocks of alternating current and continuous current are held in South Africa ready for prompt delivery.

Your enquiries are invited

The British General Electric Co. Ltd.

Representing THE GENERAL ELECTRIC CO., LTD., of England

REGD TRADE MARK

Capetown
83/89, Castle St.
Box —— 1327
Phone —— 1401-2
Tel.:—"Induction"

Head Office:—
Johannesburg
Corner Loveday and Anderson Streets
Box 2406 Phone 4242/3 Tel.: "Current"

Durban
56, Field Street
Box —— 922
Phone —— 1793
Tel.: — "Ampere"

Agents at:—Port Elizabeth, East London, Maritzburg, Bulawayo, Delagoa Bay, Beira, Dar-es-Salaam, Tanga, Zanzibar, Mombasa, Nairobi, Uganda, Etc.

The Outlook on the Rand.

AUGUST RETURNS EXPECTED TO BE MOST SATISFACTORY HOW WORKING COSTS HAVE BEEN REDUCED AND HOW MORE EFFICIENCY IS BENEFITTING PROFITS—SOME VALUABLE FIGURES "SELECTIVE DEVELOPMENT" DISCUSSED THE INDUSTRY AND THE SHARE MARKET—SOME IMPRESSIONS BY A WANDERER RETURNED.

On returning to the Rand after three months' residence in portions of Southern Africa which are not subject to such violent political and economic cataclysms as the Reef is so accustomed to one cannot fail to be impressed by the remarkable change that has come over Johannesburg and its industrial environs since the month of May. At that time the mines were emerging from the morass of inefficiency, supine policy and absurdly high working costs in which the Witwatersrand had been struggling for years and into which a large portion of it would have sunk for ever had it not been for the assistance rendered by the "premium." With the decline in the price of gold the industry was on the point of disaster when the strike intervened and the Rand was rescued, reclaimed and redeemed only after a Revolution which tore at the vitals of the whole country.

In May the mines were regaining their native complements. They were setting their houses in order and trying to evolve order out of chaos. There was still much bitter feeling along the Reef, the Mining Industry Board was endeavouring to again bring conciliatory machinery, destroyed by the strike and subsequent revolt, into action, and the mining companies were at last able to bring to a head the protracted negotiations regarding the purchase of enemy shareholdings. At that time, then, the position was hopeful but still difficult.

To-day the affairs of the Rand are decidedly more satisfactory and the outlook is very much better. There are still, of course, many difficulties to be surmounted, but generally speaking both the present position and the future prospect have changed materially for the better.

Working costs have been reduced and are likely to be reduced still further, and it does not require any tremendous insight into the affairs of our mines to realise that efficiency is improving.

Some Illuminating Figures.

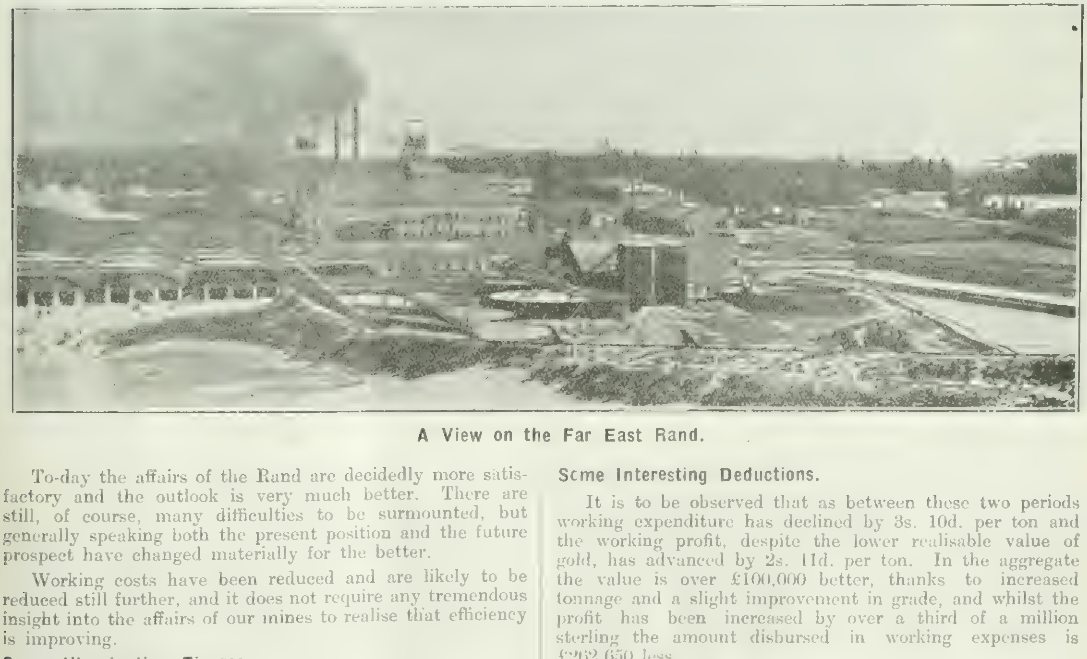
A few figures abstracted from the monthly analyses of production issued by the Transvaal Chamber of Mines clearly demonstrate the better position. In December last, just before the memorable strike, average working costs on the Witwatersrand were 24s. 11d. per ton, seven mines were run at a loss, and numerous other concerns earned infinitesimal profits—the E.R.P.M., for example, with a capital of nearly 2½ millions and a large debenture debt, earned only £559, or a paltry penny per ton!

Contrast this with the results for July of this year, when working costs averaged 21s. 1d. for the whole Reef and when only two properties—the Roodepoort United and the Simmer and Jack—had expenditure in excess of revenue. Of these, the former has for long been the "sick man" of the Rand, and at the Simmer results are improving, as from the middle of August it has been possible to crush a more normal tonnage.

Results Contrasted.

A tabular contrast of the July, 1922, and December, 1921, figures is illuminating. Comparative results have been as under:

	Dec., 1921.	July, 1922.
Tons milled	1,954,057	2,057,895
Yield (fine ozs.)	664,935	713,068
Realisable value per oz.	£4.775	£4·6
Dwts. per ton	6.733	6.804
Revenue	£3,121,437	£3,223,949
Revenue per ton	31/11	31/0
Working expenditure	£2,437,872	£2,175,222
Expenditure per ton	24/11	21/1
Working profit	£683,565	£1,048,727
Profit per ton	7/0	9/11



A View on the Far East Rand.

Some Interesting Deductions.

It is to be observed that as between these two periods working expenditure has declined by 3s. 10d. per ton and the working profit, despite the lower realisable value of gold, has advanced by 2s. 11d. per ton. In the aggregate the value is over £100,000 better, thanks to increased tonnage and a slight improvement in grade, and whilst the profit has been increased by over a third of a million sterling the amount disbursed in working expenses is £262,650 less.

It is clear from these figures that the mines are now being worked more economically and more efficiently and that the balance between costs and profits—that is to say, as between employees who want their just wages and employers who require their just dividends—is far more equably held than hitherto. It is clear, too, that those pessimists who foreshadowed the early ruin of Johannesburg through a too liberal use of the pruning knife in [illegible] have not been justified in these gloomy prognostications for in July although only £202,000 less was disbursed in working costs than during the impossibly extravagant month of December over £[illegible] more was earned for shareholders, a large number of whom are resident on the Rand and in South Africa.

The position in this regard is likely to still further improve—we believe that the August figures will be considered eminently satisfactory. The aggregate amount disbursed in expenditure is not likely to decline further, but on the contrary will probably expand as the basis of [illegible] is considered. Profits will be better as more ore is milled and as efficiency is improved.

Recent Discoveries.

Then, too, there is the pleasant consideration that in a number of mines development has disclosed better values during the last few months, and of course with the lowering of costs many millions of tons are automatically being transferred from the unpayable to the profitable side of the industrial ledger. That numerous propositions have quite recently and almost suddenly discovered that they still have high grade ore remaining in their properties occasions us no surprise. Months ago we hazarded the guess that when the enemy shareholding difficulty was settled and the managements were able to regain a measure of sane industrialism a number of mines which were and had been vainly searching for more profitable ore would soon—*mirabile dictu*—discover that which they had sought. This, of course, is only sound policy. It is selective mining, or, to express it more accurately perhaps, selective development tuned to synchronise with the general policy of the industry as defined by what are termed the leaders of the industry, the men who, acting either for themselves or for others, very rightly regard gold mining on the Rand as a business and not as a philanthropic profession and who look upon the share market as a necessary adjunct (generally more profitable than the business itself) of gold mining.

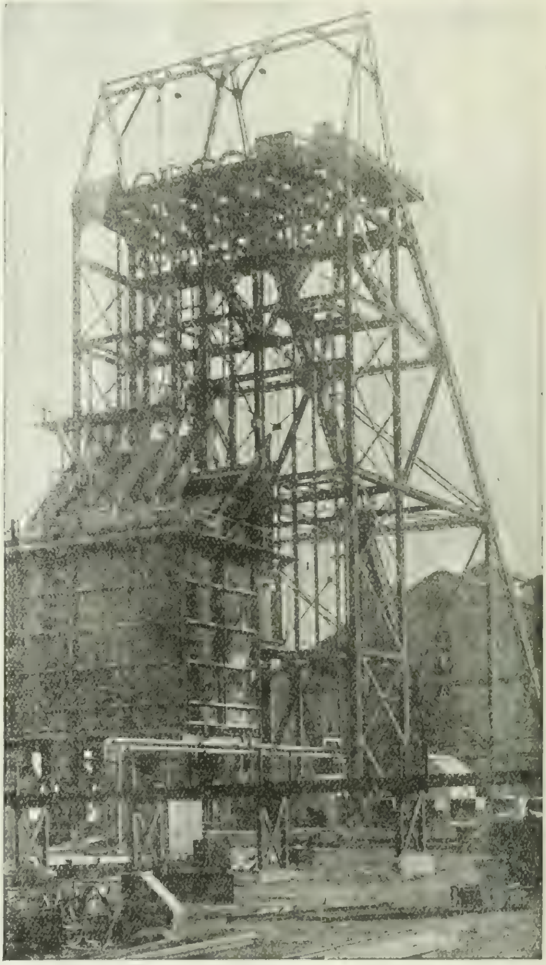
The Market Outlook.

The share market is strong and active to-day, and by the time our next issue goes to press it will probably be stronger and still more active, for the August returns, so we understand, will encourage optimism. And since the share market is the barometer of the Reef, Johannesburg is once again becoming exuberant, and this, although some of the former working Monte Christos have to disgorge their fur coats and grand pianos and motor cars and realise that if they want to earn a living wage they have got to do a fair day's work. The aftermath of the calamitous events of the earlier portion of the year is still, naturally enough, darkening some aspects of our social and industrial life. But Johannesburg still remains true to its reputation of being about the one place in the world wherein a man may live upon the interest of what he owes, and if we are in for a good market for the next six months, as some optimists declare we are, there should be a lot of money changing hands before the end of the year.

The Hub of South Africa.

A period of prosperity, it need hardly be said, postulates a period of stability and freedom from strikes and revolutions. The new Conciliation Boards aim at this, and it is ardently hoped that they will succeed. The Reef and Johannesburg have much evil reputation to live down.

On returning to Johannesburg from less strenuous and more peaceable portions of Southern Africa, one cannot help feeling that the Golden City is a singularly soulless place with an artificial society based upon nothing but the callous bricks of mammon. All the same, Johannesburg is the hub of the South Africa to-day, and for many years it is likely to be the hub of a South Africa perhaps expanded far beyond the present territorial limits of the Union. And if, therefore, the Rand can for a time steer clear of the shoals of unrest and escape the heavy hand of additional Government taxation the new found industrial glory of the Reef will be reflected throughout the southern portion of the African continent. It looks indeed as if the Rand had turned the corner, and if this be so it is very sure that South Africa will speedily turn the corner too.



Turf Shaft of the Village Deep, where increased Profits are now being earned.

Alluvial Diamond Returns.

The returns for the alluvial diggings for July show some interesting features. In the South West Transvaal 1,053 diggers found diamonds to the value of £52,283. At the Pretoria fields, 150 diggers found stones which sold for £3,979. In the Barkly West district, 445 producers found stones valued at £23,480, and in the Herbert district 523 diggers produced stones valued at £15,554. It is too early yet to gauge the value of the new Kareefontein fields near Bloemhof, in the pegging of which 1,800 diggers took part last week.

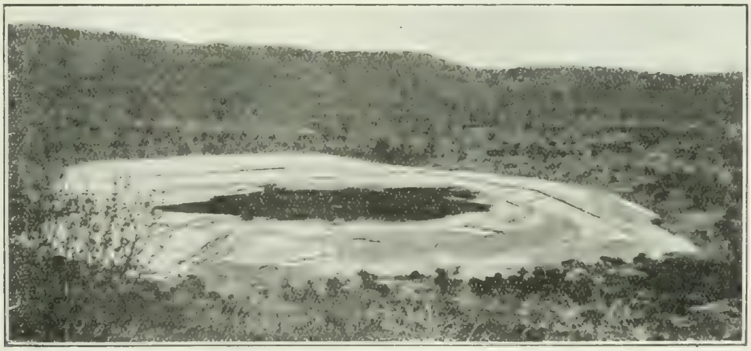
New Outlook for South African Alkali.

DESCRIPTION OF UNIQUE OCCURRENCE—REORGANISATION PROPOSALS—NEW GOVERNMENT LEASE—DETAILS OF DEBENTURE ISSUE.

The alkali pan, which gives the name to S.A. Alkali, Ltd., is situated 10 miles west of Hammanskraal on the Pietersburg line, which, in turn, is about 27 miles from Pretoria. The pan itself forms the base of a huge crater formation, which is said to be the most perfect in the world, while another curious feature is that the pan lies far below the surface of the surrounding country, say, some 150 to 200 feet. The crater is 400 feet in depth from its surrounding ridge, and is about two miles in circumference. The pan is covered with shallow liquor or brine, in which the only living creature is the "alkali bug," a small insect shaped rather like a beetle. Below the water is a layer of mud, which is permeated with salt and soda, and below that again is a layer or layers of "trona," or solid crystallised salt and soda. It is after passing through this latter formation that the clear liquor (coloured light brown) is encountered. Several boreholes have been put down at various points in the pan, and it is from these that the liquor (which is a mixture of salt and soda, running up to 10 per cent. soda, and 18 per cent. to 20 per cent. salt) is pumped into two cement tanks at the south end of the pan; from thence it is pumped into a reservoir of 40,000 gallons capacity. This reservoir stands upon high ground at the back of the factory, and the liquor flows by gravitation to the factory and into four extractors, capable of containing 400 gallons each. In these extractors the liquor is brought to a low temperature by means of freezing brine. The salt remains in liquid form, but the soda, due to the low temperature, forms into slushy crystals, known as decca-hydrate. From the extractors the decca-hydrate is passed into the centrifugal machines. These revolve at a rate of about 3,500 revolutions a minute. In these machines the soda adheres to the sides, while the salt solution flows away in the form of a liquid. When the charge from the extractor has been run out and the centrifugal machine is stopped, the soda is discharged into a bin below. The soda (decca-hydrate) at this stage contains 10 molecules of water, and to eliminate this moisture it is necessary to melt the soda again to liquid form by placing it in a long cylinder—known as the melter—heated by steam. When it has become liquid it is aspirated to a vacuum pan, where it is subjected to boiling. By this steam boiling process molecules of water are boiled off and the soda again solidifies. When completed, the soda is again discharged into a filter below the boiler. The soda is now known as the monohydrate. This produce is then put through a Merton furnace, where the remaining moisture is eliminated, and the soda is now in a saleable state, known as sodium carbonate or soda ash of commerce. The process of screening and bagging only remain to complete the operation. Latterly only two tons of soda were being produced per day, while all the salt and a percentage of soda ran to waste.

The New Government Lease.

Under the new scheme £50,000 8 per cent. debentures have been guaranteed, and now that satisfactory lease arrangements have been made with the Government, the reorganising of the machinery will be commenced at an early date. These alterations and additions will necessitate the closing down of the carbonate of soda plant for about three months. The pan will be thoroughly tested, and an endeavour made to calculate the amount of liquor- and brine-containing mud in the crater. Up to the present the indications are that the supply is inexhaustible, as there is no alteration in the level of the liquor in the numerous boreholes, in spite of all the pumping that has been done.



The Famous Salt Pan at the South African Alkali.

Capital Reorganisation Scheme.

Details of the scheme will shortly be announced whereby the present indebtedness of the company will be liquidated and the plant renovated and increased. A sum of approximately £50,000 will be required for these purposes, and a debenture issue, guaranteed by the S.A. Townships, Mining and Finance Corporation, and others, has been arranged. These debentures will carry interest at 8 per cent., payable half-yearly, and convertible at the option of the holders into shares of the company during a year from November, 1922, without further payment, and by a payment of 5s. per share for a second period of one year ending October 31, 1924. Any debentures as are not converted into shares shall be redeemable by the company at par between three and five years after October 31, 1924, by annual drawings. These debentures shall in the first place be offered to shareholders. The present capital of the company is £100,317, and if all the debentures are converted into shares the capital will then [illegible] will be published in due course.

The Profit Aspect.

It is difficult to estimate the working costs when the factory is in full running order, but it is roughly estimated that expenses ought not to exceed £6,000 a month for the larger scale of working. That would mean an output of 240 to 300 tons of carbonate of soda, 150 tons of caustic soda, and 700 tons of salt per month, and the profits therefrom should be considerable. From such an output the estimated revenue would be from the carbonate of soda at £12 10s., a total of £3,000; from the caustic soda at, say, £45 per ton, £6,750, and from the salt at £2, say £1,400, or a grand total of £11,150. This could be increased as the market requirements permitted the output of caustic soda to replace carbonate of soda. In view of the comparatively small capital these profits would obviously allow for substantial dividend distributions.

Old Plant, S.A. Alkali.

EXPLOSIVES
FUSE
DETONATORS
ACIDS
CHEMICAL PRODUCTS
SHEEP DIP
CATTLE DIP
ETC., ETC.

CAPE EXPLOSIVES WORKS, Ltd.
P.O. DYNAMITE FACTORY,
SOMERSET WEST, C.P.

Mining Men and Matters.

We desire to make the announcement that the Durban branch office of the Ingersoll-Rand Company has been changed to 349 Smith Street as from September 1st.

* * *

In the recent examinations of the City and Guilds of London Institute, Mr. Fred Delfos, son of Mr. C. F. Delfos, Managing Director of the South African Iron and Steel Corporation, has been awarded the 1st prize and silver medal in the subject of Coke and By-Products Manufacture. This success carries with it a further prize and silver medal offered by the Coke Oven Managers' Association. The examination was open to all entrants from England and Wales.

CARBIDE
ALL SIZES
IN 1, 5, 10, 50 lb. TINS
and 100 lb. DRUMS

Apply: MANAGER,
RAND CARBIDE, LTD.,
SOUTH GERMISTON
'Phone 252 Germiston.

DAVIS-MADE
HYGROMETERS

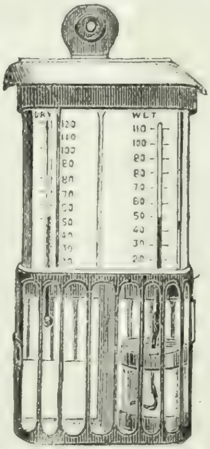
FOR USE IN MINES TO ASCERTAIN THE AMOUNT OF MOISTURE IN AIRWAYS.

Fitted with porcelain scales, tubes divided on the stems, strong hinged metal protecting case.

Special leaflets, illustrating and describing the many other good things which are manufactured by **John Davis & Son (Derby), Ltd.**, will be gladly sent on request.

Sole South African Agents:
BARTLE & CO., LTD.,
LOVEDAY HOUSE. P.O. Box 2466,
Phone 3553. Wires: "FAGGOT."
JOHANNESBURG.
AND AT
P.O. Box 444 .. .. KIMBERLEY
P.O. Box 1228 .. .. DURBAN

DAVIS-MADE MEANS HIGHEST GRADE



Six Months' Diamond Returns.

SALES OUTSTRIP PRODUCTION—RESTRICTED SALES AT LOWER PRICES.

The official returns of the diamond mining industry for the six months to June 30th last show that sales and output are still greatly restricted, and that the sales show a healthy increase on the output. In other words, the tendency is towards a recovery in the market, though the price realised per carat, 73s. 8d., is less than the average price for 1921, which was 81s. 7d. The following table gives the official figures in summarised form

	Estimated Value.	Value.	Value Realised per Carat
	£	£	s. d.
*Witwatersrand	117	117	
Pretoria	299,668	107,237	—
Klerksdorp	270,985	270,985	—
Transvaal	570,770	378,339	60 1
Kimberley	49,466	311,858	—
Barkly West	196,328	196,328	
Taungs	4,875	4,875	–
Herbert	18,274	18,274	—
Hopetown	2,189	2,189	—
Hay	8,759	7,235	–
Cape	279,891	540,759	93 7
Fauresmith	116,829	124,123	—
Boshof	6,126	6,610	—
Kroonstad	2,196	1,700	—
Winburg	8,879	9,279	—
Vredefort	14,006	14,006	—
Orange Free State	148,036	155,718	62 1
Union of South Africa (6 months ended 30/6/22)	998,697	1,074,816	73 8
Year 1921	3,103,448	2,116,796	81 7
Year 1920	14,762,899	10,328,405	117 0
Year 1919	11,734,495	13,379,662	101 . 0

* Recovered by certain Witwatersrand Gold Mining Companies.

The Diamond Market Outlook.

Signs of a revival in the diamond market multiply, and the London papers are full of confused and obscure references to "rings" and "corners" that are symptomatic, at any rate, of increased interest in the market. The Selling Syndicate is, of course, the great and only "ring" in the diamond world, and there should be little mystery about its aims as they have been often explained and defended by the leaders of the industry. Early in the week it was cabled that a great corner in diamonds was the subject of a sensational statement in the "Daily Express" by a Hatton Garden diamond merchant, who said he did not know who was making the corner but he was certain that a mysterious shortage exists at a time of unprecedented demand. He added that diamonds would soon become the currency of the world if money continues to depreciate at the rate it has done during the past few months. Rich Americans, he declares, are buying all the stones they can secure, while Japan is also buying on a large scale. Fine small stones are also very scarce and consequently the slump is giving place to a steady demand for all qualities. The price has risen from 10 to 15 per cent. during the last four months and is likely to rise further. Another member of the same firm, said a representative of the firm, had just returned from a tour of the Continent where he was totally unable to secure diamonds. The Germans are hanging on to their diamonds like grim death, regarding them as the only real security left them. The same spirit obtains in other countries.

The Kimberley View.

According to wires from Kimberley in that centre nothing is known of the alleged "corner" in diamonds reported in Reuter cables; at least inquiries in the market have failed to elict any knowledge of it. It was admitted, however, that the demand for stones had improved and that the industry was recovering.

Later news from London is to the effect that experts reject the suggestion that an attempt is on foot to make a corner in diamonds. One Hatton Garden firm showed an interviewer a quarter of a million pounds worth of diamonds, and added that he could give the names of one hundred firms able to supply the needs of the largest customers. He generally admitted that prices were hardening, but this was capable of easy explanation. One reason was traced to the abundance of money in America, which led Americans to be continually on the look out for the best gems to be obtained. Dealers in rough diamonds, therefore, were able to keep up prices. Another factor is the depreciated currencies, particularly in Germany and Austria, which led people there to invest in diamonds as affording more stable value than paper money. A third cause is the fact that a quantity of diamonds belonging to the Russian Imperial aristocratic families with which the market was swamped months ago is now absorbed. Merchants state that business has become brisker all over the world, especially during the past two months. They anticipate a lot of business between now and Christmas.

Opening up a Diamond Prospect.

This seems a well-founded and reasonable view to take, and we must be content to await further encouraging news which depends so much, of course, upon the general outlook in world affairs.

Swaziland Mineral Concessions.

A Meeting of Mineral Concessionaires will be held on 28th September, 1922, at Corner House Board Room (2nd Floor) at 2.30 p.m., to consider position *re* Swazi Mineral Tax 1920 and proposed scheme for throwing open mineral concessions for public prospecting. All Mineral Concessionaires are invited to be present personally or by authorised representatives.

WM. POTT, Convener.

28th August, 1922.

Hydromax –
for rapid economical Driving

THE IDEAL

Air Feed Raising Drill

Our New Tappet Casing entirely eliminates leakage of water over the operator or back into the cylinder. It is the only type which does this.

Why not give it a Trial?

It will give you the highest efficiency, lowest cost of maintenance, and further, is practically dustless.

CLIMAX DRILLS

The Climax Rock Drill & Eng. Works, Ltd.

INCORPORATED IN GREAT BRITAIN.

49, STELLA BUILDINGS,
Corner Rissik and New Streets . . . . JOHANNESBURG.
P.O Box 4256. Telegrams: "Thumbscrew." Telephone 2794.

Send for Catalogues of all classes of
ROCK DRILL and PNEUMATIC TOOLS.

The Wankie By-Product Plant.

TYPE OF INSTALLATION DESCRIBED—THE PLANT IN OPERATION.

In the following article a special correspondent describes the By-Product Plant in operation at the Wankie Colliery, Rhodesia, in which Tar and Ammonia Liquor are recovered by the "pipe process."

The coking plant consists of [illegible] by-product ovens. Each oven chamber is 32 ft. 9 in. in length, width, 2 ft., height [illegible]. The charging of the ovens is done from above by means of [illegible], which receive coal from the coal bunker situated close to the entrance of the coal mine. The bunker has a capacity of 1,000 tons, and is divided into ten compartments of 100 tons each, and is fed with coking coal from the washery Nos. 1 and 2, built by the [illegible] Company. At No. 1 washery there are eight beds, four for duff and four for singles and nuts. The capacity of No. 1 washery is 40 tons per hour. At No. 2 washery there are ten beds, five for duff and five for singles and nuts; the capacity of this washery is 60 tons per hour.

The Wankie By-product Plant.

Another unit is the Carr crusher or disintegrator, which crushes about 35 tons of nut coal per hour; the remaining nuts and single coal are shipped. The construction and operation of the several ovens which have been arranged into by-product ovens is briefly as under.

There are 31 vertical heating flues in each heating wall, which separates any two adjacent coking chambers.

The Plant in Operation.

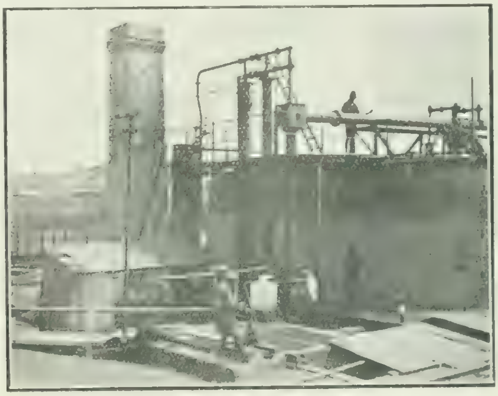
The 31 openings in the by-product ovens are closed and the heating gases are supplied to the coke bench side, and ram side, by way of the main connecting pipes, and distributing flues. The heating flues [illegible] are supplied with a measured quantity of gas through nozzles provided for this purpose at the end of each flue. Simultaneously the collecting flue is opened to the atmosphere, and air passes by way of the connecting flue, at the top of each opening, from the non-by-product oven. Here the gases mix with the air and combustion takes place at the top of each side wall. The admission of air is regulated by means of a brick damper placed at the entrance of the gas flue.

The [illegible] gases [illegible] the 31 vertical flues, which form the side wall, under the sole of the by-product ovens, and then through two openings into the horizontal flue under the sole of the next oven, which is a non-by-product oven, [illegible] the main flue to the chimney. Gases evolved during the distillation of the coal pass into a 10 in. collecting main pipe by means of the usual ascension pipes. From the collecting main pipe the gas is led to a 10 in. atmospheric pipe and partly freed from tar, and then passes to the water condensing pipe.

In this method, known as the pipe process, the gas passes in counter current to ammonia liquor at a certain stage. The gases arrive direct from the ovens into the 10 in. collecting main at a temperature of about 90 degrees centigrade. Before entering direct into the atmospheric pipe, the gas and tar and liquor enter a square box, where the products are divided. The gases leaving the square box enter an atmospheric pipe and water condenser.

Condenser Plant.

The condenser in which the gases meet the water is 18 ft. high and 10 in. in diameter. The under part of the atmospheric condenser and the water acts as a receiver for the condensed products from the gas. The cooled gas from the water condenser is drawn by a fan, which forces it into the apparatus intended for the abstraction of the ammonia. This consists usually of a scrubber or washer box, or a combination of the two, the last-mentioned apparatus in this case being placed first.



The Wankie Plant: Another View.

The function of both the washer and the scrubber is the removal of the whole (or part) of the ammonia and some portion of the carbonic acid and sulphuretted hydrogen contained in the gas, which is effected in the case of the washer, and in that of the scrubber, by bringing the gas into contact with water.

The hydraulic main, which is a 10 in. pipe set on an incline, and extending the whole length of nine ovens, contains a mixture of tar and ammoniacal liquor which is kept at a certain level by an adjustable overflow. The gas on leaving the ovens travels by way of the 4 in.—generally called ascension—pipe and cross pipe to the dip pipe, down which it passes and bubbles through the liquid in the 10 in. pipe. It then escapes at the top of the liquid to the condensing plant.

The dip pipe previously referred to dips into the hydraulic main to a certain distance below the level of the liquid contained therein. On the large hydraulic main the dip or seal usually runs from two to three inches. The object of the 10 in. pipe system of condensation is in reality twofold, consisting of, firstly, in cooling the gas to the required temperature; and, secondly, in removing the tar, as a considerable portion of the tar is in the form of innumerable minute globules of tarry matter, each of which contains a small volume of gas, and it is necessary to subject these tarry globules to some degree of friction in order to break them up, so in this case the 10 in. pipe and square box effects the removal of a great quantity of the globules into liquid tar.

Further, in order to avoid any contact of the gas with the heavy tar, the 10 in. pipe which acts as a hydraulic main is supplied with ammoniacal liquor, a large quantity of heavy tar being at once got rid of, the pipe acting as a receiver. This prevents the gas having to bubble through the column of tar, as is ordinarily the case, with the consequent absorptive action of the thick tar which collects as a rule in the 10 in. pipe, which acts as a hydraulic main. After being deprived of the heavy tar in the 10 in. pipe the process of condensation is performed very slowly, and the gas is cooled down from 90 degrees centigrade to 20 degrees centigrade.

The condensing plant is under complete control, through the provision of suitable by-pass valves and connections, so as to regulate the amount of cooling according to the temperature prevailing. Thermometers are inserted in the inlet of the atmospheric pipe and the outlet of the water condenser for the purpose of ascertaining the temperature at any moment, so that the condensing plant is kept under working control.

The condensers are divided into two classes, first, atmospheric condenser; second, water condenser. The atmospheric condenser consists of the ordinary vertical 10 in. pipe, and the principal water condenser 10 in. pipe with five 1 in. pipes inserted. Placed between the 10 in. pipe and the washer is a fan, which acts as an exhauster and also plays a very important part in the economy of by-product recovery plants. The fan is employed for the purpose of withdrawing the gas from the ovens and then propelling it onward through the condensing plant where the gas has to pass on its way to the oven flues.

South African Currency.

Further support to the opposition against the enforcement of the South African Currency and Banking Act of 1920 as regards the resumption of specie payments in the Union was given by the chairman of the Standard Bank of South Africa at the recent annual meeting of the shareholders. It will be recalled that under the Act mentioned, whose main provision was for the establishment of the now functioning South African Reserve Bank, the resumption of gold specie payments would in effect commence from June 30, 1923. A Commission appointed to re-examine this provision of the Act reported against the resumption of specie payments at so early a date in view of present world conditions in the foreign exchanges. The Union Government, however, took no action, and decided to let the challenged portion of the Act stand, despite the uncertainty such a course is calculated to create in the minds of those interested in South African finances. The authority above quoted endorsed the conclusion arrived at by the Commission. It is not to be taken, of course, that the Government is at present committed to restoring specie payments on June 30, 1923, but it would be better if this limiting date for present currency conditions were removed altogether from the Act. Judging by the existing outlook for the foreign exchanges in general, the resumption of specie payments at so early a date, in fact, independent action in this matter by the Union at any time, must prove a doubtful policy for the country.

Busy Man's Page.

DIGEST OF TECHNICAL LITERATURE.

Metallurgy.

Magnetic Roasting of Ironstone.—Iron and Coal Trades Review, August 4, page 151.

Pulverised Coal at the Bunker Hill and Sullivan Smelter.—Engineering and Mining Journal Press, July 22, 1922.

Electrical Engineering.

The Electrical Equipment of the London County Hall.—The Electrical Review, page 151.

Economics, etc.

An Index of British Economic Conditions, 1903-14.—*The Iron and Coal Trades Review*, August 4, page 145.

Industrial and Labour Information.—International Labour Office, Geneva, July 28.

Some Problems in Mine Accounting.—Engineering and Mining Journal Press, July 22, page 145.

Engineering.

Colliery Power Plant: Engine Crankshaft Failures.—Colliery Guardian, page 270.

Boiler Firing with a Turbo Pulveriser.—Iron and Coal Trades Review, page 152.

30 *cwt Hydraulic Wharf Cranes for Tilbury Docks.—The Engineer*, page 126.

Coal.

Recent Developments in the Technology of Fuels.—Colliery Guardian, August 4, page 269.

The Use of Unbonneted Safety Lamps.—Colliery Guardian, August 4, page 271.

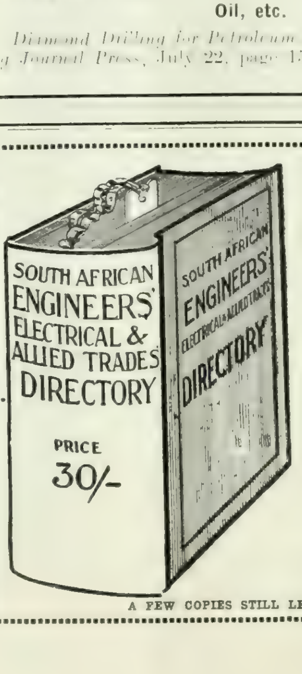
Finances of the Coal Trade.—Colliery Guardian, August 4, page 281 .

U.S.A. Coal Production in Recent Years.—Board of Trade Journal, August 10, page 156.

American Orders and Welsh Markets.—Coal Trade Journal, August 2, 1922.

Oil, etc.

Diamond Drilling for Petroleum.—Engineering and Mining Journal Press, July 22, page 153.



INCLUDING
COMPLETE MINING
DIRECTORY
OF SOUTH AFRICA.

PUBLIC SUPPLY
UNDERTAKINGS
RAILWAYS
TRAMWAYS
SUGAR MILLS
&c. &c.

Published by
S.A. Mining & Engineering Journal
Stock Exchange Building
Johannesburg

A FEW COPIES STILL LEFT.

The Week in the Sharemarket.

FIRMNESS MAINTAINED—GOOD AUGUST RETURNS EXPECTED—THE DIAMOND REVIVAL.

Considering the amount of heavy selling that has taken place since our last issue appeared, our previous remarks with regard to the sound undertone of the market have proved to be fully justified. Although prices are somewhat lower, they have wonderfully withstood the avalanche of scrip from London as well as local sources. During the past few days it has been apparent in the house that the local source of supply has ceased, at any rate for the time being. News from London reaches us at the time of writing that the market there is quieter, although prices quoted do not in any way indicate any marked signs of weakness. At the same time we are informed that the public are taking more interest in Kaffirs, and it must be remembered that an empty London during July and August should now be beginning to fill up, and should bring more operators to our market. Diamonds have taken a sudden jump in the last few days, and we venture to think that this is a good pointer as to the European position, showing that the uneasiness regarding this factor is more apparent than real. Although there is no official news at present we have reason to believe that the extraordinary July profits will be even exceeded by the August returns.

	Fri. 25th	Sat. 26th	Mon. 28th	Tues. 29th	Wed. 30th	Thurs. 31st
Anglo-Amer. Corp.	24 0	22 3		25 0	25 6	25 0*
Apex Mines	7 6†			6 6*	6 9	
Aurora Wests	5 10½	4 9*	5 6†	6 0†	5 3*	5 3*
Brakpan Mines	54 6	53 6	53 0	54 6		52 6
Bushveld Tins	0 3*		0 3*	0 3*	0 3*	0 3*
Cinderella Cons.	4 0*	4 6	4 6	4 7½	4 4*	4 6*
City and Subs.	2 4†		2 4†	2 4†	2 4†	2 4†
City Deeps	52 6*	53 0	53 6	52 6*	52 6	
Clydesdale Colls.	19 0*	19 6*	20 6			
Con. Diamonds	16 0	15 1½	17 0	17 6	17 9	18 7½
Con. Investments					28 9*	30 0†
Con. Langlaagtes		19 0†	19 0†	18 0	18 0†	18 0†
Con. Main Reefs	14 0*	14 0*	14 9	14 3	14 0*	14 3
Con. Mines Select.	18 0†	17 6*	18 6	19 0*		19 0*
Coronation Colls.	35 0†		34 0†	34 0†		
Do. Freeholds		1 0†	0 11*	0 11*		0 11*
Do. Syndicates	5 6	5 3	5 6*	5 6*	5 9	5 0*
Crown Dmds (New)	6 6	7 0	6 5			
Crown Mines	55 9	54 6	55 3*	55 0*	54 6*	55 0
Daggafontein Mines.	4 0*	4 4	4 5	4 2	4 1	3 11
East Rand Coals	1 11	1 9*	2 0*	1 11†	1 8*	1 8*
East Rand Deeps			1 0†	1 0†	1 0*	
East Rand Minings		10 6*	10 0*	10 0*		10 3*
East Rand Props.	12 6	12 0	12 10	12 6	12 3	12 11
Eastern Golds	0 7*		0 6*	0 6*	0 6*	0 7
Ferreira Deeps	8 9	7 6*	8 9	8 9	10 0	
Frand Smith Dmds	3 8	3 7*	3 9	4 1	5 5	5 0
Geduld Props.	65 6	65 0	65 0	65 0	65 6*	65 9
Geldenhuis Deeps		8 0				
Glynn's Lydenburgs	13 6*		14 0†	12 0*	13 0*	13 0*
Govt. Areas	105 0	102 0	105 0	104 0	105 0†	102 6*
Hume Pipes	13 6	13 3*	13 0*	13 9*		14 9
Knight Centrals	4 10	4 7*	4 9*	4 9*	4 9*	4 9
Lace Props.	12 6†	11 0*	12 0*	12 6*	12 0†	
Leeuwpoort Tins	5 9*	5 6*	6 0	5 6*	5 9	5 6*
Luipaardsvlei Est.	—	4 0*	5 4	—	5 0	4 6*
Lydenburg Farms	4 6*		4 6		4 6*	4 6*
Meyer and Charltons	72 6*					
Middelvlei Estates	2 0	2 0*		2 0*	2 1	2 0*
Modder B's	34 0	34 0	35 0	34 0	33 6	34 6
Modder Deeps	44 0	44 3	44 6	45 0	45 0	45 0
Modder Easts	8 9	8 4	8 6	8 6	8 10	9 3
Natal Navig. Colls.	27 6*	27 6*	30 0*		30 0*	30 6*
National Banks	210 0†	210 0†			210 0†	200 0*
New Eland Dmds.	—	35 0†		35 0†	35 0	37 0
New Era Cons.	8 3	7 6	7 6*	7 9*	7 9*	7 6*
New Geduld Deeps	1 7*	1 6*	1 6*	1 8	1 7*	1 7*
New Kleinfonteins	9 0*	9 9	9 3	9 0	8 9	8 9
New Modders	83 3	79 6	83 6	84 0	82 6	82 6
New Primrose						7 6*
New State Areas	32 9	32 0	32 9*	32 6*	32 3	32 6*
Nigels	—	5 0*				6 0†
Nourse Mines	17 10½	17 0*	19 0	18 7	18 6	17 9
Pretoria Cements	43 0*	44 0	43 3	44 6*	44 6	44 6*
Rand Collieries	1 9*	1 4	1 6*	1 9*	1 6*	1 9*
Rand Mines				54 0*		

	Fri. 25th.	Sat. 26th.	Mon. 28th.	Tues. 29th.	Wed. 30th.	Thurs. 31st.
Rand Nucleus		1 3*		1 3*	1 6*	
Randfontein Centrals	16 3*	15 0	16 6*		15 6	15 6*
Do. Estates	25 0	24 10½	25 3	24 10½	24 3	24 6
Robinson Deep "A"	33 9*	33 4	34 6	34 3*	33 6*	
Robinson Deep "B"	10 9	10 7½	11 0	10 9	10 0	10 0*
Rouxville Dmds.	1 6†	1 0*	1 6		1 6	
Roberts Victors	7 9*	8 3*	7 9*	7 9*	8 0	8 6
Roodebergs	3 3†	3 0*	3 0*	3 0	2 10	
Ryan Nigels			3 0*	4 0†		
Simmer and Jacks	4 6	4 6	4 6½	4 6½	4 6	4 5
S.A. Breweries			27 6*		29 0*	
S.A. Lands	5 0*	5 0*	5 3*		5 0*	5 0*
S.A. Reserve Bank	£142	£140*	£141†	£141†	£141†	£140
Springs Mines	51 3	49 6	52 0	51 3	51 6	51 0*
Sub-Nigels	13 6*	13 3	13 6	13 3*	13 3*	13 6
Swaziland Tins	5 6*	5 6*			6 0*	6 0*
S.A. Alkali		15 3*	16 0†	15 0	16 0	
S.A. Townships	10 6	11 0†	10 3*	10 3*	10 9	11 3
Transvaal Lands		15 9†				
Trans. G.M. Estates	13 9	16 0	14 9	14 3	13 9*	13 3*
Transvaal Silvers	12 3*	12 0*	13 0*	13 0*	13 0*	
Tudors	0 8*	0 11*	0 9*	0 11†	0 8*	—
Union 5 per cent.	£101½*	£102*	£103†	£102	£102	£1[illegible]
Van Dyks	1 10½	1 9	1 10*	1 10	1 10*	
Van Ryn Deeps	70 6*	71 0	70 6*	70 0	70 9	71 0
Village Deeps	16 3*	15 0	17 0	16 9	15 9	15 9*
West Springs	15 3	14 7½	15 9	15 4½	15 0	14 9
West Rand Cons.		5 3*				5 3*
Western Rand Est.	5 9	5 9	5 6	5 9†	5 0*	5 0*
Witbank Collieries			38 0*			
Wit. Deeps	17 0†	17 3*	17 0*	16 0	16 3	17 0
Zaaiplaats Tins	2 2	2 2*	2 3*	2 2*	2 3	2 2*

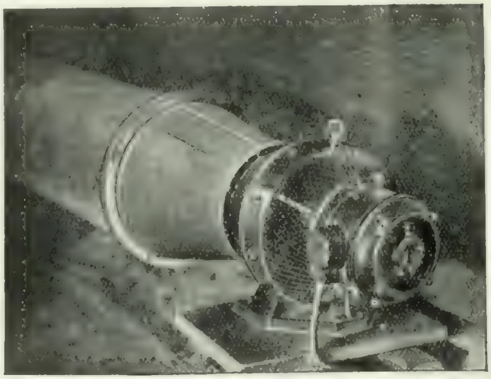
* Buyers. † Sellers.

OSBORN'S

BEST
TOUGHENED CAST STEEL
WHEELS AND AXLES,
LOOSE TRUCK WHEELS,
"U" PULLEYS,
"DALY" PATENT TAPPETS,
AND
CASTINGS OF ALL DESCRIPTIONS.

SAMUEL OSBORN
(S.A.), LIMITED.
P.O. Box 3162   'Phone 4673
JOHANNESBURG.
WORKS: CLYDE STEEL WORKS, SHEFFIELD

SPECIAL VENTILATION IN MINES



. SIEMENS .
SCHUCKERT
SCHLOTTER
BLOWER.
80% EFFICIENCY.

AIR OR ELECTRICALLY DRIVEN. —— COMPACT AND POWERFUL A NOTEWORTHY ADVANCE IN DESIGN.—MOTOR CANNOT BE OVERLOADED WHATEVER THE DUTY DEMANDED. —— THE IDEAL BLOWER FOR DEVELOPMENT WORK.

BRANCH OFFICE FOR SOUTH AFRICA :

C. KLEUDGEN, LTD.,

Corner of LOVEDAY and MARSHALL STREETS, JOHANNESBURG.

P.O. Box 1164. Telegrams : "KLEUDCO." Telephone Central 5435.

Points About Robins Conveyor Belt—No. 3

¶ The outstanding recent development in conveyor belt manufacture was the invention in 1920 of a means for properly curing a belt's edges.

¶ This process, which is fully protected by patents, is used only in making Robins Belts.

¶ Thanks to it, the edges of Robins Belts do not fray, the plies do not crumple and separate, and the rubber does not peel off in long strips.

¶ Their ability to stand rough usage has aroused much favourable comment among operating men, who all know the importance of keeping belt edges intact.

Play Safe—Use Robins—The Original.

Robins Conveyors (S.A.), Ltd.

(Head Office : Robins Conveying Belt Co., New York, U.S.A.)

BOX 4736, Telephone 4182, JOHANNESBURG
BOX 811, Telephone 3383, DURBAN

MILLAR DENNIS
ORIGINAL MAKERS OF

"BRADFORD INVERTED"

PLUG COCKS.

SOLE AGENTS:

GEO. CRADOCK
—AND CO. (S.A.), LTD.—
75-77, CULLINAN BUILDINGS.

P.O. Box 316. Telephone 539.
Tel. Add. : "ROPES."
JOHANNESBURG.

The South African Mining and Engineering Journal.

HEAD OFFICE: 176-180 Stock Exchange Buildings (2nd Floor), Fox Street, JOHANNESBURG, Union of South Africa.

Telephone **913.** P.O. Boxes **963** and **4573.**

Cables and Telegraphic Address: "MINING JOURNAL."

ANNUAL SUBSCRIPTION RATES: Oversea, £2; Union of South Africa and Rhodesia, £1 10s.; Local Delivery (Town only), £1 6s., payable in advance.

AGENTS FOR GREAT BRITAIN AND AMERICA: Argus South African Newspapers, Ltd., Byron House, 82-85, Fleet Street, London, E.C. 4.

Copies of this Journal are obtainable at all Branches and Agencies of the Central News Agency, Ltd., at all News Agents and Railway Bookstalls throughout South Africa, and at the London Agency as above.

CONTENTS.

PAGE.
The World's Declining Gold Output 1741
The Outlook on the Rand 1743
New Outlook for South African Mica 1745
Six Months Diamond Returns 1747
The Wankie By-Product Plant 1749
The Busy Man's Page 1750
Share Market 1751
Topics of the Week 1753
Financial Notes and News 1756

Engineering Section:

Harbour Engineering Equipment 1757
The Position of Swaziland Tin 1758

Trade and Industries Section:

The Week in the Mining Material and Engineering Trades 1759

TOPICS OF THE WEEK.

The Prime Minister and Zululand.

Since the Prime Minister returned from his tour of Rhodesia he has had his time fully occupied and in the Western Transvaal he has made further speeches on the subject of expanding the territory ruled by the Union Government. General Smuts is now proceeding to Natal and Zululand and his tour of that portion of Africa will include a visit to Kosi Bay. The Premier's inspection in person of the potential harbour on the Zululand littoral, to which all eyes on the East Coast are at present directed, seemingly has made the Portuguese authorities realise that the Kosi Bay undertaking may be something more than bluff after all, and there are in Delagoa strange stories current concerning mysterious expeditions to spy out the Union's projected new Port, of which mention was first made in this country by the "Mining Journal" early last year. But whether the visit of General Smuts and the inspection by Sir George Buchanan mean any early and forward movement in the direction of establishing a new Port or not it is certain that the Prime Minister will have much to see and to interest him during his journeys in the Garden Colony and its great annexe. Zululand is unquestionably the Cinderella of the Union and the fortunes of this country might immeasurably be increased if the Government were properly awakened to the immense possibilities of cotton growing on the great Ubombo Flats where the State owns a million acres of rich and fertile Crown Lands merely awaiting the advent of a railway to make them perhaps the most profitably productive lands in the Union.

Wanted a Railway.

In Natal astonishment is freely expressed that the Government, in its new and progressive scheme of railway building, has left this area out of consideration. An easy railway route was surveyed a considerable time ago, and while the construction programme must necessarily have limits, there is every justification for a line to serve these rich cotton, dairying and sugar-growing regions. This is more emphatically the case seeing that there are a million acres of Crown lands—ground belonging to the State which is simply thirsting for settlers and for development.

Actually the Government has refused an offer to provide £400,000 for the construction of a line made by Mr. Richard Rouillard, on behalf of influential Mauritian interests, who also were prepared to undertake the building of two sugar mills. Not only will the Government give no assistance in the matter of railroad construction, but it even leaves private enterprise to build and maintain roads. A roadway was constructed right through to the Pongola Poort some time ago, and it was built entirely by private individuals. It is doing excellent work in bringing these fertile areas into touch with existing railway communication, and it is already carrying a considerable amount of traffic.

A number of people—in a few cases private syndicates and companies—are now reaping rich harvests as the result of their enterprise in this district. And if the Government and the people of the Union generally are indifferent to the promise of this part of the country, one or two astute individuals and companies have not been slow to gauge its prospects. It is, for instance, a fact worthy of record that one or two gentlemen with considerable quantities of capital behind them after touring practically the whole of the British Empire have selected the neighbourhood watered by the Pongola and the Umkusi Rivers for the investment of their money.

Rhodesia and the Union.

The members of the Responsible Government Party in Rhodesia have issued a Manifesto. Their case against absorption by the Union is a strong one and is very ably expressed in the creed of belief just issued. During the visit of General Smuts a truce was called by both the Unionists and the Responsible Governmentites but since the Prime Minister's departure both sides have been intensifying their campaigns and propaganda. There are so many complicated aspects of the question that the problem is likely to dominate all other considerations of life in Charterland for many months to come and whole volumes easily might be written on the subject.

The Responsible Government Party's manifesto is a document of great length and the first portion of it deals clause by clause with the terms offered by the Union. A brief summary of some of the objections offered by the Responsible Government Party to incorporation in the Union has been issued. The Responsible Government Party makes no secret of the fact that its adherents fear the Nationalist menace.

A very outspoken criticism of the Union is contained in one section which declares that the vast majority of the British element in the Union with whom the Rhodesian Government Executive have come in contact are against union. Some of the pertinent questions asked by the Responsible Government Party are as follows.—

"Will the Nationalists give an undertaking that in the event of Rhodesia entering the Union, they will abandon the idea of a South African Republic, or secession from the British Empire?

"Will the Nationalist Party, if they should attain power, guarantee to Southern Rhodesia that the terms of union offered by their political opponents will be respected?

"Are Rhodesians prepared to enter a State where they may in a short space of time be part of an ineffective minority against a majority who will then prove the power as well as the expressed will to carry out the above ideals, and part them from the British Flag?

These are considerations of cardinal importance to the people of Southern Rhodesia, and it is well that they should ponder them deeply before sacrificing their inalienable right to govern themselves, and possibly sacrificing the substance of their own freedom for the shadow of a fractional and important representative in the 'larger Union.'

Then the manifesto, in its concluding section, says:—
"In dissenting from the policy of incorporation at the present time, we are actuated by no mean or parochial spirit.

"We welcome the Union Premier's definite assurance that whether we enter the Union or retain our own administration, the Union will do all in their power to assist us. It is, perhaps, needless to say that those who stand for Responsible Government will likewise do all in their power to reciprocate towards our brethren in the south, irrespective of race.

"We entertain sentiments of the utmost friendship, but we feel that we can best serve the interests of our country, of South Africa at large, and of the Empire generally, by remaining a separate entity for the present."

Dealing with the financial policy under Responsible Government, the manifesto states that it is suggested that a loan of a million and a half is all that is necessary at the beginning—£650,000 to pay for public buildings to be taken over, and £300,000 to repay the Imperial Loan, leaving £300,000 to provide funds for a land bank, and £250,000 for immediate needs, such as new buildings, works, etc. This, with £30,000 to meet the extra cost of legislation and of the executive, would mean an annual additional charge of £108,000 which it is proposed to cover by a tax on unoccupied and undeveloped land of 1½ per cent., valuation to be on the New Zealand system, and by raising the transfer duty to the Cape rate of 4 per cent. It is contended that the land tax will encourage the settlement of the country.

The Delagoa Muddle.

The currency problem at Lourenco Marques has drifted from bad to worse, and the new Currency Law, which was gazetted in the "Boletim Official," Mozambique Province, on Saturday last, has created consternation in commercial and financial circles connected with the port and province of our Portuguese neighbours. The new law states, *inter alia*: "Fifteen days after this law comes into force all establishments of any kind open to the public for the sale of goods, articles or products of the soil can only transact business against payment in escudos and Banco Nacional notes so long as they are in circulation. Notes and foreign silver, the circulation of which is forbidden in the Province, will be confiscated on and after September 1 when found in circulation." It may be remarked that one "escudo" represents, at present rates, 3d. British currency. The effect of the official establishment of the escudo standard in the neighbouring Province is viewed with grave apprehension in Transvaal commercial circles. Everything is in the hands of the Banco Nacional Ultramarino. This alone fixes the rate of exchange. No British silver is now in circulation. There is unanimous opinion on one point, that the new Act is paralysing trade and commerce in Lourenco Marques. It is not at all clear to those who have studied the question what the purpose of the enactment is. Far from doing Mozambique any good, it is, in the opinion of those competent to judge, likely to strike a deathblow at its commerce, and some contend that all the through oversea traffic will inevitably be diverted to Durban. Delagoa Bay, in these circumstances, will have to rely upon the internal trade of Mozambique for its prosperity. While the enactment will inconvenience the Union of South Africa, and it will dislocate certain financial arrangements, it will injure nobody except the Government of Mozambique itself. It is feared that the decree of the Mozambique Government will irreparably damage trade in Delagoa Bay generally, and that it is bound to reflect on those people who have financial interests there. It is interesting to note the effect which the Mozambique Currency Law will have on the passage of mine labourers to and from the Province. In the case of natives returning from work in the Union and Rhodesia, arrangements are to be made for them to exchange the notes and silver—the circulation of which is forbidden—for national money. An agreement regulating this is to be drawn up between the Government and the Banco Nacional Ultramarino. The wages of natives employed in industry and agriculture will be adjusted from time to time in accordance with the depreciation of national money, the basis of adjustment being the wages paid in 1914.

United States Coal and South Africa.

The exact position obtaining in the Coal Mining Industry of the United States is somewhat difficult to ascertain from the cables appearing in the local Press. The matter is however one of very great importance to the Union inasmuch as South African Coal Mining, which rather harshly but not altogether inaccurately perhaps has been described as an Industry which benefits from other people's misfortunes has expected to benefit from the shortage of industrial coal in the United States and the export of large quantities from the South Wales pits. These facts and expectations naturally lend interest to some figures of world coal production and consumption presented by the Trade Record of the National City Bank of New York. They show that the United States, which has more than one-half of the underground coal of the world, supplied 42½ per cent. of the world's coal output from the beginning of the war to the end of 1920, as against an annual average of about 38 per cent. in the years preceding the war. In 1921, however, with the big fall-off in output, the United States supplied but only 40 per cent. of the world's coal production, though in the immediately preceding year, 1920, their share of world production was 45 per cent.

The United States, Great Britain, France, Czecho-Slovakia, Japan, Belgium, India, China, Australia, and South Africa are, in the order named, the world's chief coal producers, and the countries here named normally supply approximately nine-tenths of the world's coal output.

World coal production in 1921, adds the bank's statement, aggregated about 1,120,000,000 metric tons, against 1,331,000,000 in 1918 and 1,342,000,000 in 1913.

The existing underground coal supplies of the world, or "reserves" as they are called by the geologists, were estimated by a World Geological Congress which met in Canada in 1913, at 7,397,283,000,000 metric tons, of which that of the United States was put at 3,838,657,000,000, or about 52 per cent. of the total; Canada at 1,234,269,000,000; China, 995,587,000,000; Germany (in 1913), 423,336,000,000; and the United Kingdom, 189,533,000,000.

Nearly all the known coal of the world lies north of the equator, the statements of the Geological Congress above referred to giving to the southern hemisphere less than 5 per cent. of the known coal reserve of the world, though, in the opinion of experts, this share in the southern hemisphere will be materially increased by further exploration and discoveries.

While the quantity of coal turned out from the mines of the United States since the beginning of coal mining a century ago is about 14,000,000,000 tons, it is estimated by the Geological Survey that approximately 99 per cent. of the original supply is still available, while, as above indicated, the known coal reserve of the United States is about 52 per cent. of that of the entire world. Coal consumption in the United States averages for the entire year over 1,000,000 tons per day.

Notes & News.

The Miners Officials Ballot.

The ballot for the election of paid and unpaid officials of the Mine Workers' Union, which is being taken throughout the Transvaal, closes to-day. It is being conducted under the auspices of Mr. R. Miller, of the White Labour Department. The Mine Workers' Union have thoroughly organised themselves to secure a record ballot, realising that the present is one of the most important epochs in the history of mining in this country, and the fact that no question will arise with regard to the secrecy and absolute genuineness of the ballot is a factor that makes for enthusiasm. All outside districts, such as Kimberley, Jagersfontein, Witbank collieries, etc., have been asked to speed their ballots along in order that there may be no delay in the counting.

* * *

A New Detonator.

Considerable interest has been aroused in mining circles during the past few days by the introduction to the Rand of a new detonator which is claimed to be absolutely moisture proof, and to be far more powerful than any type hitherto used on the Reef. In addition to its moisture resisting qualities (by almost entirely eliminating a prolific source of accidents, owing to misfires due to ineffective detonation), it is held that its enormous power will result in a considerable saving in explosives by enabling the use of a lower grade of explosives than that usually employed. The tube is of aluminium instead of copper.

* * *

The Wolhuter.

The latest quarterly report for the Wolhuter—that for the three months ended July 31—shows that 911 feet were developed. Of this, 796 ft. were sampled; and 260 ft. on Main Reef gave 8·4 dwt. over 50 in.; South Reef, 68 ft. gave 17·7 dwt. over 32 in.; and the 45 ft. of pyritic lode gave 9·1 dwt. over 44 in. The total profit was £6,243. The low profit for the period was due to a decreased yield per ton milled. The Central Mining and Investment Corporation, Ltd., having acquired the ex-enemy shares of this company controlled by the Union Custodian of Enemy Property, offered them to the board at cost (1s. 6d. per share) plus 5 per cent. commission. This offer has been accepted, and it is the intention of the board to recommend shareholders to reduce the capital of the company by the cancellation of these shares, but, as the total number has not been finally determined, no steps have been taken toward convening the extraordinary general meetings of shareholders which will be necessary. The liability in respect of the balance of ex-enemy shares still to be purchased is small.

* * *

The late Gardner Williams.

News reached the Rand, too late for comment in our last issue, of the death in America of Mr. Gardner F. Williams, the former General Manager of De Beers. The deceased, who was the father of Mr. Alpheus F. Williams, the present General Manager of De Beers, and would have been 81 years of age on his next birthday, had been ill since November last. Mr. Gardner F. Williams was for many years a leading figure on the diamond fields. From the amalgamation of interests onwards he was in charge of De Beers mines, and watched over and directed their development. He was one of those who assisted to build up the greatest diamond industry in the world. He had a unique knowledge of the South African diamond formations and deposits, and was highly esteemed in many countries for his scientific attainments. His long association with the diamond fields began when he left California in June, 1884, to take charge of the gold mines at Pilgrim's Rest, Northern Transvaal. He returned to California at the end of 1885. The following year found him back again in South Africa, in a new capacity. He had become engineer in South Africa to the Exploration Company, Ltd., London, which office he filled during 1886-1887. He then became General Manager of the De Beers Mining Company, and with the amalgamation of the mines, which was effected by the late Mr. Cecil Rhodes, General Manager of the De Beers Consolidated Mines, Ltd., which positions he filled from May 1st, 1887, to December 31st, 1905. During his managership the diamond industry was placed upon a scientific footing, better fitting it to withstand the vagaries that are attendant upon an article of luxury, and the name of "De Beers" became world renowned. What was a crude and chaotic industry was organised and developed so as to constitute an asset of national importance. His famous work "The Diamond Fields of Africa" is now, of course, a classic.

* * *

The Outlook for Ferreira Deep.

It is understood that the position at the Ferreira Deep has much improved of late, and the results of the tragic troubles of last year have now been finally overcome. It will be remembered that the Chairman, at the annual meeting in March last, estimated the life of the mine at three years, barring accidents. The last annual report of the manager of the mine showed that the work of mining the joint boundary pillar between the Ferreira Deep and the Robinson Deep was continued during last year, and approximately 90 per cent. of this pillar had been mined by the end of the year. The tributing agreement entered into with the Village Main Reef Gold Mining Company in August, 1918, was cancelled by mutual arrangement and the mining area previously held under tribute was purchased from that company for a consideration of £37,500, the new arrangement took effect from the 31st December, 1920, and in addition certain other mining claims were purchased for a further sum of £2,500. Survey and legal fees brought the total cost of the transactions to £41,041. Satisfactory results have been obtained to date. A further tributing agreement was entered into with the Village Deep in May, 1921, which gives the Ferreira Deep the right to mine certain South Reef adjoining the latter company's boundary on a royalty basis of 2s. per ton mined. A small tonnage has already been mined from this area which has resulted in sufficient profit to warrant the further development of the area, which work is now in hand. Generally, it may be said that the outlook for the mine is better, and it will participate in the brighter days now in sight for the majority of the mines of the Rand.

* * *

H.E. Proprietary.

The accounts of the H.E. Proprietary (New), Ltd., for last year showed an improvement on those for the previous year; the profit being £22,530 as compared with £18,230. A dividend of 7½ per cent. was declared as against 5 per cent. for 1920. In the balance sheet investments in shares, stocks, and debentures have been reduced from £184,339 to £160,452, but the outlay on certain concessions in the Northern Transvaal and the losses arising from the liquidation of the Murchison Free State Company and in respect of the advances to the New Lisbon Berlyn and certain minor amounts have been written off, while the balance of the company's interest in the Piccadilly Hotel was disposed of during the year. Debtors, advances, and sundry debit balances have risen from £69,513 to £115,595 and cash from £9,137 to £22,408; but sundry creditors have almost doubled, to £62,488. Suspense account has increased by £3,177, to £24,247, and no additions have been made to reserve for depreciation or general reserve. As the directors state, in regard to the South African interests, the period has been characterised by high mining costs, a declining gold premium, labour unrest, and a marked disinclination on the part of the investing public to venture money in gold mining. The management is therefore all the more entitled to congratulation on having done so well in adverse conditions. There are, however, signs of improvement, as has been remarked in these columns on many occasions recently, and we agree that "it seems not unreasonable to hope that during the next few years it will again be possible to obtain support for the development of new areas."

Financial Notes & News.

Crown Diamond Mining Co.

Regarding the new issue of 250,000 shares of 5s. each, it is desired to remind shareholders and members of the public who intend making application for an allotment in the issue that the application lists will close on the evening of the 6th September next.

* * *

S.A. Reserve Bank: Governor's Views on World Position.

In a lecture last week in Pretoria Mr. H. W. Clegg, Governor of the S.A. Reserve Bank, said he believed there had been a proposal for the creation of a great international bank which should act in relation to the banks of the world in the same way in which the central banks of the various countries acted in relation to the country in which they were situated. One of the main objects of such an international bank would be to secure stability of value in commodities, or, in other words, to prevent fluctuations of value in its own notes. Too much stress was, however, laid upon stability of prices. The rise and fall of prices was a barometer of the relations of supply and demand, but the fluctuations in price of any particular commodity might be more or less observed when an average was taken of prices of commodities in general. It appeared to Governor Clegg that an international bank was at present outside the range of practical politics. He, however, looked forward to the League of Nations doing good work in the matter of stabilising the world's economic position; it would take time, of course, but, in his opinion, the League was working in a common sense and practical manner.

* * *

Standard Bank and Union's Future.

Presiding at the annual meeting of the Standard Bank in London, Mr. E. Clifton Brown was very optimistic regarding the future of South Africa. He had just returned from a visit to the Union during its worst strike period, but, nevertheless, he was immensely impressed with the potential possibilities of the country, which impression had been enhanced by recent advices of new railway development and those undertaken by the Union Government. He thought that South Africa was learning, perhaps quicker than other portions of the world, that true prosperity can only be secured by increased production, thrift and real industry. Mr. Clifton Brown was much impressed by the possibilities of the iron and steel industry in the Union, and said there was no doubt that South Africa was rich in deposits of other useful metals and minerals, the successful exploitation of which the difficulties of transport and lack of water have in many case militated against. But in his opinion a material expansion in the base metal industry in South Africa could be looked forward to in view of the railway development schemes contemplated in the near future. The payment of a dividend at the same rate as last year was declared, which, considering the parlous times South Africa has experienced during the past year, must be considered very satisfactory.

* * *

Amateur Mining Finance.

The prospectus of a company which is to be registered in Rhodesia with the ambitious title of the Public Mining Corporation has been publicly issued. The Corporation has a nominal capital of £50,000 divided into 5,000 ordinary shares of £10 each. The flotation—if the concern goes to flotation—will have some novel features. One of the directors has been elected—it does not state by whom—for a period of five years. All the employees will be drawn from the shareholders. A block of claims on Doornkop is to be acquired for a consideration of only £1,000. A free option to purchase an adjoining flooded out mine for £9,000 is the second of the assets of the company. The promoter appears to be Mr. A. F. Smith, who is described as an author, his chief work being, apparently, a publication entitled "The Shamer of Mines."

* * *

New Bloemfontein Loan.

Bloemfontein has rejected the offer of a London financial house to lend it £400,000 at 5 per cent. in favour of the offer of the South African Mutual Life Assurance Society to advance the money required at 6 per cent. At a special meeting of the Council, the ex-Mayor, Mr. J. H. B. Reitz, stated that the Society had agreed to advance £400,000 at 6 per cent. per annum, £200,000 being repayable in five years and £200,000 in six years, the money to be available as required by the Council. He considered the Council very fortunate in getting the money from the Mutual, and by doing so they had effected a saving to the town of quite £14,000. The Bank had offered to lend at 5½ per cent. at par, but the bank commission was 2 per cent., whereas no commission was payable to the South African Mutual, while another consideration from which they benefited was the difference in exchange, which was one-eighth per cent. in comparison with 1½ per cent. charged by the bank.

* * *

Industrial Finance.

The latest industrial census shows that the manufacturing industries having a gross output exceeding the £2,000,000 mark were as follows; the number of establishments being stated in brackets:—

	£
Engineering Works, etc. (625)	18,517,381
Grain Mills (705)	12,133,426
Sugar Mills and Refineries (29)	7,606,520
Bakeries and Biscuits (333)...	4,669,837
Printing and Publishing (276)	4,114,236
Electric Light and Power (140)	3,678,251
Explosives and Matches (5)	2,528,234
Tobacco, Cigars and Cigarettes, etc. (64) ...	2,370,515
Soap and Candles (20)	2,316,360
Breweries (90)	2,060,754

The output of boots and shoes was £1,191,206 for 146 establishments.

* * *

Income Tax in Union and Rhodesia.

In a recent issue of the *Bulawayo Chronicle* prominence is given to the publication by the Responsible Government Association of a comparison between the amount of income tax paid in Southern Rhodesia and what would be paid under (a) Union terms offered for the next three years, and (b) Union ordinary rates as at 1921-22 for normal and super tax. The total white population of Southern Rhodesia is given as 33,620, of whom only 855 or 2·55 per cent. are liable to pay income tax; under ordinary Union rates it is estimated that 11·85 per cent., or 3,983 of the population would become taxpayers, and that the total amount of tax payable would be £218,617 as compared with £103,725 at present. It also appears that in Southern Rhodesia the married man contributes 22 per cent. of the total income tax, whereas under Union he would have to contribute 41 per cent.. A comparison of the average amount of tax per head in the case of single and married individuals with varying incomes shows that single taxpayers with an income of £301 to £1,000 pay £2 18s. 6d. per head, while under Union they would pay £12 3s. 3d. per head (an increase of 315·83 per cent.); and, that married taxpayers with an income of £401 to £2,000 pay £2 8s. 7d. per head, while under Union they would pay £17 7s. 1d. per head (an increase of 614·34 per cent. These comparisons are startling, but it must be admitted that under Union some saving of income would accrue from the introduction of Union Railway rates as lower rates would lower the cost of living, *e.g.*, in Bulawayo at the present time the 12-ounce loaf cost fivepence, but the average price of bread in the Union is fourpence per 16 ounces.

ENGINEERING SECTION.

Modern Harbour Engineering Equipment.

THE LAST WORD IN WHARF CRANES—LESSONS FOR SOUTH AFRICAN DOCK IMPROVEMENT.

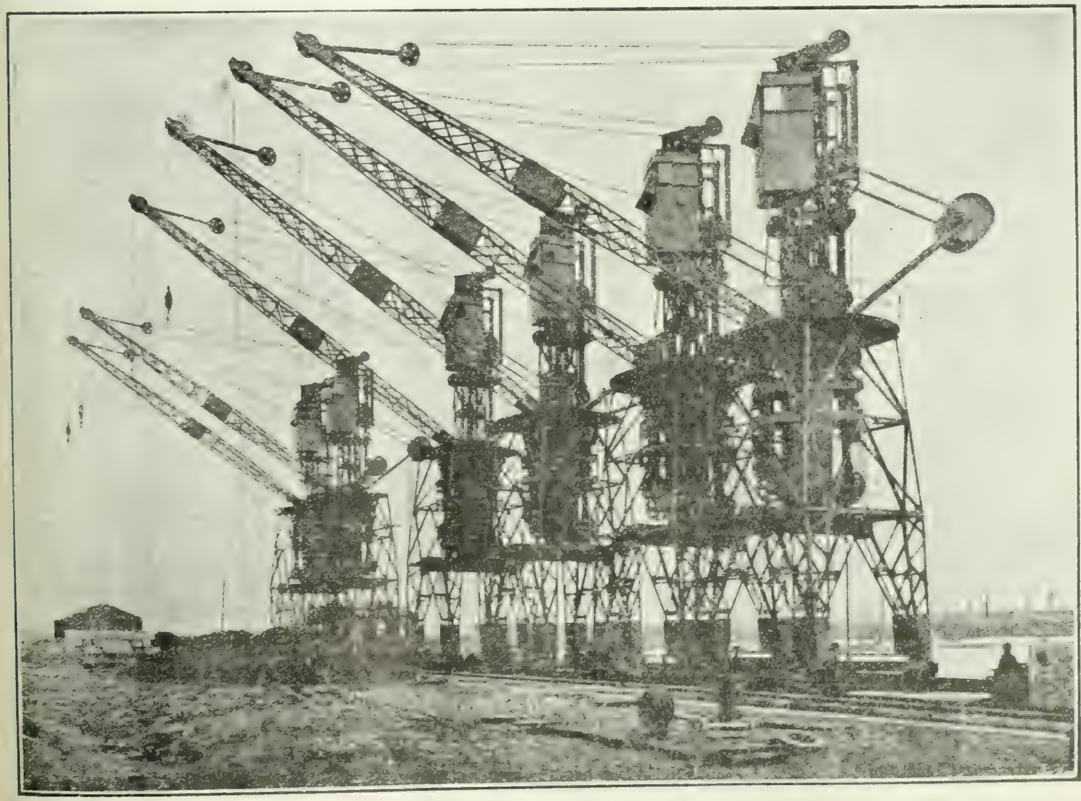
The improvement of the dock equipment of Delagoa Bay and the possibility of the Union Government embarking on an extensive scheme at a Zululand port yet to be chosen makes the modern equipment of harbours of particular interest to this country just now. An interesting illustration appears on this page of six 30-cwt. hydraulic wharf cranes which have recently been supplied to the Port of London Authorities for Tilbury Docks.

The leading particulars of the cranes are as follows:—

Maximum working radius	48 ft.
Minimum working radius	20 ft.
Height of lift above quay	45 ft.
Depth of lift below quay ...	30 ft
Total range of lift	75 ft
Centres of rails	13 ft. 6.in
Clearance under portal	14 ft.
Angle of slew	310 deg.
Hydraulic working pressure ...	750 lb. per sq. in

Hoisting speed with 30 cwt. 300 ft. per minute; slewing speed with 30 cwt. at maximum radius at 360 deg. per minute against a 15 lb. wind; luffing speed with 30 cwt. at 150 ft. per minute average speed; travelling about 5 ft. per minute. The hoisting, slewing and luffing motions are operated by hydraulic power, but the travelling along the wharf is done by hand.

The gantry is built up of rolled steel angles and channel sections and plates braced and riveted together, with a clear opening at the base for the Tilbury loading gauge. Above the portal heavy cross girders are provided to carry the centre pivot bearing and the rotating mast, and from the outer corners the frames are carried up to a horizontal roller-path at the top of the gantry. The mast consists of a rectangular section tower, built up of four rolled steel corner angles braced together and provided with plates and connections at the foot, for the bottom pivot bearing; at the centre for the four horizontal rollers at the roller-



A Modern Equipment of Wharf Cranes.

path, and the jib and ballast strut connections, and at the top for the sheaving and compensating pulleys and rope attachments. The jib is built up of four rolled steel corner angles riveted and braced together, fitted with stiffening diaphragms, and provided with plate connections at each end for the pulley and bottom fulcrum pins.

The crane truck consists of rolled steel channels braced together. Cast iron distance pieces 3 in. deep are arranged between the gantry and the truck to compensate for the difference in level of the track rails. The hoisting gear consists of a six purchase hydraulic jigger fixed inside the mast. The ram crosshead has two guide rollers working in guides riveted to the mast structure. The rope is led from the bottom of the jigger to a fixed pulley on the mast, and thence to the pulley at the jib head. The load is carried on a single part rope provided with a forged steel cargo safety hook and swivel and overhauling weight to Port of London Authority standard.

The luffing gear is operated by a four purchase hydraulic jigger, the last purchase being coupled to the luffing pulleys, so that when the jib is luffed in the hoisting rope is paid out, and vice versa. This compensating gear, which is of the Arrol design, is arranged to give a practically horizontal path of load when luffing. The slewing gear is operated by two six-purchase hydraulic jiggers fixed one on each side of the mast. The ropes from jiggers lead on to a fixed drum on the gantry cross girders at the bottom pivot bearing for the mast. The crane is carried on four cast steel double-flanged wheels, the journals of which revolve in roller bearings. One wheel on each side is provided with two reductions of spur gearing and a crank handle for the hand travelling.

The operating valves, which are of the slide type, are single acting for the hoisting and luffing jiggers and double acting for the slewing jiggers. The operating levers are four in number, one each for hoisting, lowering, slewing and luffing. The hoisting jigger is fitted with an automatic throttling valve to bring the load gradually to rest when approaching the fully down position. The luffing jigger is fitted with cut-off valves which are operated by the jib itself at either limit of its travel, and a balancing valve is coupled to the two slewing jiggers. There is a cylindrical counterweight box at the back of the crane, and it is so coupled to the luffing jigger as to increase its effective radius as the jib is luffed out, and vice versa. In the design of the cranes the wind pressure was taken at 30 lb. per square foot when lifting 30 cwt. These pressures represent wind forces of just under 80 miles per hour and between 50 and 60 miles per hour respectively.

The Position of Swaziland Tin.

LOW TIN PRICES—EXHAUSTION OF DEPOSITS AND UNSUCCESSFUL PROSPECTING BRING LIQUIDATION IN SIGHT.

The Swaziland Tin Company has had the worst year in its history, and liquidation is in sight. According to the annual report for the year ended the 30th June last the working profit was £700 4s. 1d., to which must be added the sum of £894 13s. 8d. derived from township revenue, interest and sundry revenue. After providing for base metal royalty, outside prospecting and taxation, a net amount of £1,126 1s. 1d. remained to be transferred to appropriation account. Adding the balance of £34,168 4s. 9d. brought forward from the previous financial year, funds transferred £340 5s. 1d., and £116 for profit on re-issue of ex-enemy shares, this account showed a total of £35,750 10s. 11d., which is carried forward, and which is represented by cash and cash assets, less liabilities. The exhaustion of the large deposits led to a decrease in the yardage cut, and consequently in the output. Economies were effected in every possible direction, and despite the low ruling price of metal the year's operations showed a small profit. The remaining ground cannot be worked at the same level of costs, and although the reserves at 30th June, 1922, showed a total yardage of 881,398 cubic yards, averaging 0.487 lb. metallic tin per cubic yard, the circumstances are such as to make it improbable that this yardage can be fully treated. The Directors are investigating the position carefully, having in mind the probable early cessation of production and the placing of the Company in liquidation. The possibility of extending the Company's productive life by securing additional ground has been carefully explored. A prospecting option has been secured over a large mineral concession in the southern portion of the territory, and active prospecting operations have been instituted.

The Directors regret to report that no encouraging discoveries have so far resulted.

The Manager's report mentions that 516 drill holes, of a total footage of 9.025 ft., were put down during the year in the Lower Mbabane Valley, Stable Creek, Upper Mbabane, Sports Flat of the Vundhlela stream and along the junction of King's Creek and the Mbabane. The total cost was £563 3s. 4d., or 1s. 3d. per foot.

AFRICAN IRON & STEEL PRODUCTS
LIMITED
SPECIALISTS IN AND MANUFACTURERS OF
TUBE MILL LINERS,
ENDS & SCREENS, Etc.,
MASS PRODUCTION.
AIR BRICKS, SASH WEIGHTS AND OTHER BUILDERS' AND PLUMBERS' SUNDRIES.
REPETITION WORK IN IRON AND SEMI-STEEL.
Works: DENVER STATION.
— Telephone 64 Cleveland.—
Head Office: 180, Main Street, JOHANNESBURG.
Telephones 5770 and 3248.
Telegraphic Address: "MAUBROWN," Johannesburg.

TRADE AND INDUSTRIES SECTION.

Week in the Mining Material and Engineering Trades.

BUSINESS SLIGHTLY BETTER—IRON AND STEEL—TIMBER AND BUILDING MATERIALS—ELECTRICAL GOODS—BRITISH TRADE—UNION'S DEVELOPMENT—AMERICAN NOTES—METAL QUOTATIONS.

General.

The note struck this week is different from that of the previous one. Then we had to record the fact that business was dull; to-day we are able to record some improvement in general conditions, slight perhaps, but still very welcome, as presaging, it is hoped, a return to more normal conditions and to the betterment so long looked for. Things, said an important importer, have undoubtedly improved during the past week; inquiries have been better on the Commercial Exchange, and altogether, without being unduly pessimistic, affairs seem to be shaping more favourably than for some time past. One of our foremost commercial men stated this week that even those going through the present mill, as regards financial matters, were beginning to realise that this was certainly the time to pull together and to put things right with a view to what is coming along. Everybody, he said, could see that things were improving, but, unfortunately, the present terrible pinch might mean disaster to many. However, there was a general feeling of optimism pervading all circles that we were about to enter a much better cycle of business conditions than we had experienced for years. He thought that within the next six months we should certainly see that revival in industry which we so long expected, and that possibly before the present year closes we should see our wishes in that respect fulfilled. Looked at from every point of view, he said, both in respect of agriculture and general commerce, every indication pointed that way.

The cue given now by the big houses in supporting their respective interests showed unmistakably their determination to show to the world that South Africa to-day is the best field for solid investment, from a gold mining point of view, in existence, and that the profits the mines are earning to-day are substantial proof to the investing public that these fields are well worthy of consideration for the next two or three years. The uplift coming to-day from the big houses proves, he said, that the economic position is such that makes old hands recognise that this is the forerunner of general prosperity—the share market paving the way to fresh capital, and such fresh capital opening up the way for new gold mining industries, in which way, of course, the commercial community scores. But taking a long view, the commercial community sees various points, in respect of which the share market is a forerunner. It may, he added, be some time before we really saw any big improvement; but the foundation of such improvement was there; and with regard to the share market, as soon as the Londoners had got back from their holiday-making and Scottish shooting—say about the beginning of September—our gold mining market was bound to advance—unless European conditions altered very much for the worse. With regard to this important matter, this commercialist, while fully recognising the gravity of the present and possible future position, thought that it would be incredible on the part of Britain to allow Germany to go down and create a state of chaos in Europe—immediately reflected, of course in South Africa —unparalleled in history. He indeed thought that our friends the Americans, just as they stepped into the breach of the Great War at the psychological moment, might now step into the position of the financial moment ,and by cancelling war debts save the general position.

Prices, in the absence of demand, remain much about the same.

Money, in the opinion of a very important merchant, is still tight. The mines, he said, were not buying and he thought were still holding for next year. The strike period had been a very trying one for many and was still continuing but he thought that for survivors it would later on mean more stable business; they would reap the benefit.

A leading importing firm of mining and machinery materials said things had been quiet on the Commercial Exchange, there had been no demand for material and, therefore, prices had been practically unaltered; but, although business just now was small, he was confident that it would shortly improve; the mines, he said, *must* eventually buy to replace depleted stocks. He said the present time, and indeed for months past, had been a lesson to merchants how to indent; it was, of course, nonsense to sell at a loss; better, of course, to sell the the half at a profit than the lot at a loss. He was, however, sanguine as to the future of the Rand's business conditions.

The commercial community is naturally very much concerned regarding the untoward outlook in Germany and the debacle of her currency; but, as previously stated, it seems inconceivable that she should be allowed to collapse and bring down, like a house of cards, the general European financial position.

Iron and Steel.

Business has been the turn better this week; the Commercial Exchange exhibiting a little more activity in the shape of inquiries and orders, but on the whole the volume of transactions has not been large.

Latest Local Quotations.—Dunswart iron, 18s. to 23s. per 100 lb. Union Steel Corporation, Limited, 19s. to 22s. 6d. Imported iron and steel, flats, rounds and squares, from 25s. 6d. to 35s.; channels and joists, 25s. to 28s.; imported angles, 27s. to 31s. 6d.; tee iron, 27s. 6d.; shafting, ⅜ in. down to 3-16 in., 7½d. to 9d. lb. ⅝ to 1½ in., 6½d.; 1¾ in. to 6 in., 4½d.; steel plates, 1-16, ⅛, 3-16, 18s. 9d. to 21s. 6d.; 10 x 5' and larger, 25s.; ¼ to ¾, 23s. 6d.; spring steel, 7d. to 8½d. lb.; bolts and nuts, hexagon, ⅜, 7 5-16d. lb.; ½ in., ⅝ and ¾, 33s. 6d. to 47s. 6d. per 100 lb.; hexagon nuts, ⅜, 8½d.; ½ in., ⅝ and ¾, 7½d.; fish plate bolts and nuts, ⅜ in., 6d. lb.; ½ in, 4d. to 4¼d.; ⅝ in. and ¾ in., 3¾d.; dog spikes, 32s. 6d. per 100 lb.; rivets, ¼ in., 6 5-16d.; ⅜ in., 5d.; ½ in and ⅝ in., 37s. 6d. to 40s. per 100 lb.; ⅝ in., 50s.; brass rods, ¼ in., 1s. 3d.; ⅜ in., 1s. 6d.; ½ in., 1s.; hexagon brass rods, 1d. lb. extra; copper rods, ⅜ in., 1s. 9d.; ½ in., 1s. 10d.; ⅝ and upwards, 1s. 9d. lb.; tool steel, 2s. 11d. to 3s. 3d.; brass sheets, 1s. 10d. to 2s. lb.; copper sheets, ¼ in. to 18 gauge, 1s 10d. lb.; 20 gauge, 1s. 11d.; 22 gauge to 28 gauge, 2s. lb.; firebox copper, 2s. 1d. lb.; copper tubes, ¼ in., 3s.; ⅜ to ⅝ in., 2s. 4d.; ¾ to 4½ in., from 2s. to 2s. 2d. lb.; phosphor tin, 2s. 7d.; ingot tin (Lamb & Flag), 1s. 9d. lb.; ingot lead £28 per ton; drill steel, 5½d.; hollow, 7d. to 8d.; 1¼ in., 6½d. to 8d.; wire nails, 30s. to 35s.; shovels, 27s. 6d. to 46s. 6d. doz.; wheelbarrows, 37s. 6d. to 42s. 6d.; picks, 32s. 6d. to 40s.; pick handles, 25s. to 30s.; hammer handles, 14 in., 4s. 10d. to 5s.;

HEAD, WRIGHTSON & Co. (SOUTH AFRICA), Ltd.

Specialists in

Gold Mining Plant, Colliery Plant, Blast Furnace Plant, and all Classes of General Engineering.

COAL HANDLING, SCREENING, and WASHING PLANTS.

Send for particulars of the "NOTA NOS" Coal Washer and "MARCUS" Screen-Conveyors.

P.O. Box 1034,
or 63-66, Standard Bank Chambers, JOHANNESBURG.

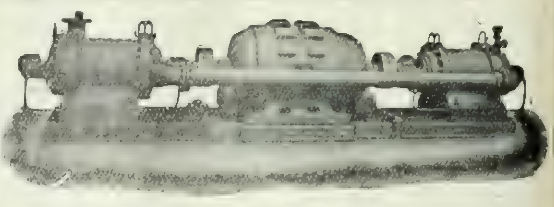
Telegrams : "NIVONIA," Johannesburg.
'Phones : 2196,—2197,—2198

J. & R. NIVEN, Ltd.,
ENGINEERS, CONTRACTORS, MERCHANTS.

BALATA BELTING
JAMES DAWSON & SON, Ltd.
BITUMEN SHEETING
GEO. M. CALLENDER & CO., Ltd.
BOILERS
PENMAN & CO., Ltd.
COAL CUTTERS AND CONVEYORS
JEFFREY MANUFACTURING CO.
COLLIERY PLANT
CAMPBELL, BINNIE, REID & CO.
DRILL STEEL
JOHN NICHOLSON & SONS, Ltd.
ENGINES, LOCOMOTIVES
ANDREW BARCLAY, SONS & CO., Ltd.
ELECTRIC LIFTS
A. & P. STEVEN, GLASGOW.
CRANES
BUTTERS BROS., GLASGOW.
HOSE, VALVES, SHEET RUBBER
THE LEYLAND & BIRMINGHAM RUBBER CO., Ltd.
LUBRICANTS
THOS. HINSHELWOOD & CO., Ltd
STEEL SCREENING
THOS. LOCKER & CO., Ltd.

Barsdorf's Buildings, Marshall Street,
JOHANNESBURG.

SULZER
HIGH-LIFT CENTRIFUGAL PUMPS.
For Mine Drainage, Waterworks, Etc.



Pumping Set suitable for lift of 2,500 ft.

LARGE LOCAL STOCKS IN MEDIUM AND LOW-LIFT PUMPS.

For particulars apply to:

RICE, WILSON & HERD,
86, 87, 88, 96, Standard Bank Chambers, Commissioner St.
P.O. Box 930 Telephones 2299 & 2300. JOHANNESBURG.

Also South African Agents for
CALLENDER'S CABLE & CONSTRUCTION CO., LTD.
BRITISH THOMSON-HOUSTON CO., LTD., etc., etc.

18 in., 7s.; 24 in., [illegible] No. 12 [illegible] per coil [illegible]

Engineering Shops.

[illegible]

Secondhand Machinery.

[illegible]

Advices from Durban indicate that prices for corrugated [illegible]

Timber and Building Materials.

[illegible] sales and building operations. This, however, is looked upon [illegible]

[illegible] 16s. to 17s. 6d. per cube. Johannesburg: American oak, 1 in., [illegible] at coast. West African [illegible] to 4 in. [illegible] 30s. per cubic foot; American yellow pine, 1s. 4d. per foot [illegible] 12 in. [illegible] white lime, 7s.; blue plaster [illegible]

[illegible] should soon be relieved.

There has been friction in connection with the proposed reduction of wages in the building trade to the basic rate to [illegible]

Secondhand Iron and Timber.

The improvement already noted in this section is con[illegible] breakaway, nor is any expected—at the utmost, only a fair advance month by month on present conditions. Timber is [illegible] Stocks are a little more abundant and second-hand yards are not now [illegible]

Electrical Goods.

[illegible] this week, one importing merchant stating there had been little to complain of during the past week or ten days. He himself had been fairly busy in dealing with town trade, and inquiries and orders from the country and outside districts had been distinctly encouraging, leading to the hope that much better things were in store in the electrical goods line in the near future. Prices locally are practically unaltered, but advices from Home show that quotations, especially for wire and lamps, are advancing. He fully expected an advance in prices within a month's time, with better business than is [illegible] not quite so tight as it had been: at any rate, accounts—a pretty sure sign—were now being better attended to than previously.

British Trade.

The economic outlook continues to improve in the United Kingdom. In India there has been a better feeling recently in commercial circles: there are sustained inquiries for British goods! In Britain the textile industry is improving most, fully 90 per cent. of the cotton looms being at work, [illegible]

[illegible] trade has made progress; but since the resumption of work not sufficient time has elapsed to note much advance. The coal industry is also doing well, but the question of wages is still retarding things. A very important event is the reduction of railway rates, brought into force at the be[illegible]

MAGNOLIA
ANTIFRICTION METAL
"FLOWER" BRAND.

TRADE MARK

HAS THE LOWEST COEFFICIENT OF FRICTION
KEEPS [illegible] BEARINGS [illegible]
[illegible] COOL [illegible] highest speeds.
[illegible]
THE MAGNOLIA ANTI-FRICTION
METAL CO. OF GREAT BRITAIN, LIMITED,
49, QUEEN VICTORIA STREET, LONDON, E.C.
Agents for South Africa: FRASER & CHALMERS, Ltd., Johannesburg,
Bulawayo and Salisbury

from 70 to [illegible], [illegible] to the general satisfaction, [illegible] as they do a very wide range of industries. The present rates are expected to continue for another twelve months.

British Empire Exhibition.

The Commonwealth, according to advices from Wellington, has decided to devote [illegible] to the New Zealand section of the British Empire Exhibition. What is the Union of South Africa going to do?

Sir Robert Hadfield, Bart., Chief of the Industrial Intelligence Department, London, referring recently to British overseas trade, said, *inter alia*, that what was most required to solve the problem of unemployment and unprofitable trade is the restoration of mutual confidence and the busy application of the whole industrial population to larger and cheaper production.

Union's Development.

Speaking at a meeting of the S.A. National Union last week, the chairman, Mr. J. Waldie Peirson, K.C., was decidedly optimistic as to the future development of the Union. He trusted that the exploitation of Kosi Bay would be found practicable. He mentioned several points which indicated improvement not only in trade but in industries. A gratifying evidence, he said, was the advance being made in agriculture. Farmers were now realising the need for altered methods. Mr. Peirson said that, according to the last industrial Census in 1920-21, the gross value of the output from our factories and individual workers nearly reached £100,000,000, entailing the payment of £21,000,000 in salaries and wages, and the use of £26,000,000 worth of South African materials.

American Notes.

Railway Strike.—The latest attempt by conference between representatives of the railway companies and the Railway Brotherhoods to settle this dispute has broken down.

Latest advices from America are to the effect that miners and owners have agreed to terms for the immediate resumption of working bituminous mines in Central Pennsylvania, miners receiving the old scale of wages.

The leading independent steel mills throughout the country, following the example of the United States Steel Corporation, are granting an increase in wages.

All the assembly plants of the Ford motor engineering works, as well as several manufacturing plants, are closing down through lack of coal, thus throwing idle 8,500 workers.

American Competition.

The Glasgow Corporation, it is announced, has accepted the offer of a United States company for tramway work, involving an expenditure of £15,000, which was £3,000 below the lowest British tender.

S.A. Reserve Bank.

The statement issued by the bank on August 26 shows the ratio of cash reserves to liabilities to the public at 81·2 per cent.

Purchase of British Steamers by Germany.

Germany has recently made extensive purchases of British old liners and cargo steamers for scrap or other interests. A report is current that American interests are behind some of the German buying. "The Times" estimates that 13 million tons of the world's shipping is over 20 years old. Germany is apparently ready to buy many of these ships, and the material thus required may be used to build new German vessels to compete with British.

Shipping: New German East African Line.

A new shipping Company under the auspices of Mr. Hugo Stinnes, has, it is announced, been inaugurated at Hamburg, with a service of six ships; four others are being constructed at the port for this new line.

German Reparations.

It is officially announced that the negotations betwen Sir John Bradbury and M. Mauclere, representing the Reparations Commission and the Government, concluded with an arrangement being reached which substantially consists in Germany guaranteeing future deliveries of coal and timber by levies on large German industries.

Strikes' Aftermath.

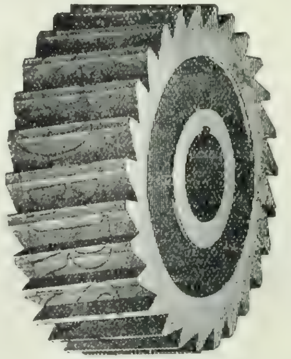
According to cabled advice from Australia, there were 621 strikes last year, involving a loss of £750,000 in wages. During the past nine years there have been 3,791 strikes, involving a loss of £11,000,000 in wages.

The miners' strike in Western Canada has, it is announced, been settled by a 15 per cent. reduction in wages compared with 1921.

Metal Market.

London Quotations, August 28th.—Standard copper, £62 cash, £62 5s. forward; electrolytic copper, £68 10s. cash, £69 10s. forward; standard tin, £158 10s. cash, £158 12s. 6d. forward; foreign lead, £23 15s. cash, £23 forward; quicksilver, £12 12s. 6d.; bar silver, 35⅛d.; and bar gold, 92s. 3d. per ounce.

"SaBeN"
MILLING
CUTTERS



LIKE ALL OF SANDERSON BROS. & NEWBOULD'S PRODUCTS "SABEN" MILLING CUTTERS ARE MADE TO MAKE GOOD— THEY STAND FOR HIGHER EFFICIENCY AT LOWER ULTIMATE COST: WE CAN SUPPLY THESE QUALITY CUTTERS FROM STOCK.

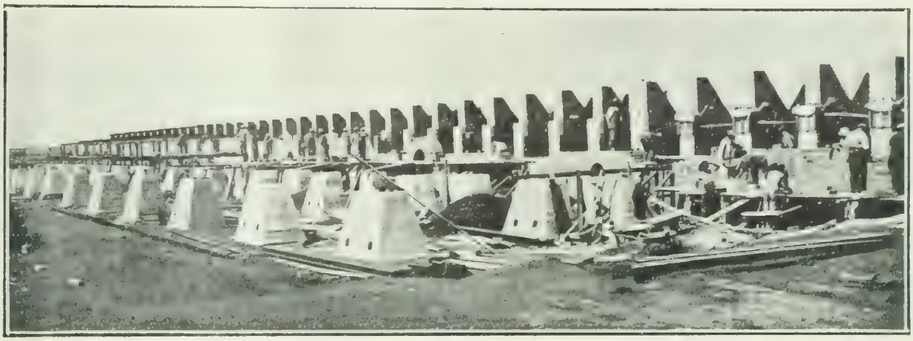
SOLE SOUTH AFRICAN AGENTS:
BARTLE & CO., LTD.
LOVEDAY HOUSE. Phones 3553. Box 2466. Wires: "FAGGOT."
JOHANNESBURG
And at KIMBERLEY and DURBAN.

New State Areas—West Rand's Outlook—Rhodesia's Mineral Production.

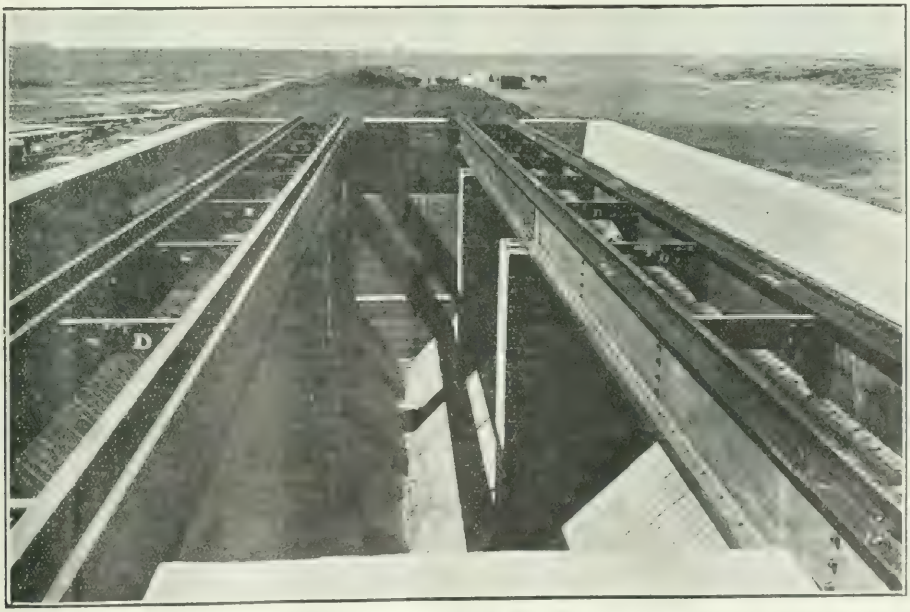
The South African
Mining & Engineering Journal
THE ONLY MINING AND ENGINEERING WEEKLY PUBLISHED IN AFRICA.
Established 1891.

Vol XXXIII., Part I. JOHANNESBURG, TRANSVAAL, SATURDAY, SEPTEMBER 9, 1922 No. 1615

Progress of Construction at New State Areas.



New State Areas: Tube Mill Foundations.



Receiving Ore Bins.

The interesting photographs reproduced above were specially taken for the "South African Mining and Engineering Journal" a few days ago, and they will enable our readers to form an idea of the excellent progress that is being made in construction of the new equipment. A short article on New States appears in this issue, and we next week propose to deal with an American criticism of the company's metallurgical scheme

SIEMENS BROTHERS
& CO., LIMITED

RUBBER CABLES.
PAPER CABLES. FLEXIBLES.

"STANNOS" WIRES.
ENAMELLED WIRES.

TELEGRAPH CABLES.
TELEPHONE CABLES.

JOINT BOXES.
COMPOUNDS. TAPES

CABLE APPLIANCES.

EBONITE.

TELEGRAPHS.
MANUAL TELEPHONES.
AUTOMATIC TELEPHONES.

RAILWAY, MINE, SHIP
AND
POWER STATION
SIGNALLING.

FIRE ALARMS.

TUBULAR POLES.
LATTICE POLES.

OVERHEAD LINE MATERIAL

FLUID & DRY CELLS.

Representatives in South Africa:

A. J. G. SIMPSON, A.M.I.E.E.
African Life Buildings, 85, St. George's St.,
CAPE TOWN.
P.O. Box 239, Cape Town. Telephone 1202 Central.

G. H. B. BERNARD, A.M.I.E.E.
9-10, Cotts Buildings, Rissik and Fox Sts.,
JOHANNESBURG.
P. O. Box 7404, Johannesburg. Telephone 408 Central.

Telegrams : "SIEMENS."

New State Areas.

EXCELLENT CONSTRUCTIONAL PROGRESS SOME INTERESTING PHOTOS.

Good progress is being made in construction work at the New State Areas Mine, and the two photographs which form this week's frontispiece and which were taken a few days ago, specially for this journal, will enable readers to visualise the rapidity with which this new Far East Rand mine is attaining to the stage of production. It is a common enough and permissible alternative expression to "commencing production" [illegible] mine is dropping stamps." But in this particular instance the term cannot be employed because the New State Company will possess no stamps to drop. It will thus be the first gold mining proposition of importance on the Witwatersrand to discard a method of ore reduction which has been in vogue for more than a third of a century and which admittedly still has a great deal to be said in its favour. It may be recalled that years ago the Denny Bros. advocated the abolition of gravity stamps and the substitution of some form of rolls. But the New State Company will be the first mine to translate such a scheme into actual practice.

A 50,000 Ton Plant.

It will be recalled that the New State Company contributed to the cost of experiments at Springs Mines which were initiated with the hope that the stamp battery could be eliminated and a cheaper form of reduction plant adopted. The experiments were so successful that it was decided to adopt the all-sliming method of ore treatment, and it is hoped that in this way considerable saving in capital expenditure will be effected. The plant is designed for a capacity of 50,000 tons per month, with the possibility of extension for a larger tonnage. The plant should be running early in 1923.

Shafts and Capital.

In reply to queries from correspondents in regard to this company, the following data may be of interest: Capital issued, £1,051,000 in £1 shares. Property 2,049 claims, adjoining Brakpan, Government Areas, Geduld, Springs and West Springs. Two shafts have been sunk to the reef. The north shaft struck on December 22, 1920, at 3,578 feet, 1 dwt. over 6 inches in faulted and disturbed ground; while the south shaft struck on October 19, 1920, at 3,676 feet, 89.9 dwt. over 18.9 inches, or 1,697 inch-dwt.

What will New States Pay?

From the position of the mine it is reasonable to anticipate that enriched areas will be encountered, as the technical opinion is that the rich shoots from Brakpan, Government Areas and Geduld enter this property at various points. Taking this opinion into consideration, it is advisable when making a calculation of the future possibilities of the mine to allow a generous basis of, say, two-thirds of the profits to the Government and one-third to shareholders. The formula used is $Y = \frac{750}{X}$, X being the ratio of profit to recovery and Y the Government's share. Unlike the Government Gold Mining Areas lease, this company's profits are subject to mining taxation; therefore the approximate one-third to shareholders will be modified accordingly.

New States and Springs.

The photographs appearing in this week's frontispiece illustrate the massive nature of the tube mill foundations and the mill bins. Accompanying this article, too, is a photo illustrating the reorganised crushing and treatment plant at Springs Mines, where experiments, which largely induced New State Areas to erect an all-sliming plant were conducted some months ago.

A general view of the reorganised Springs Mines Plant. The New State Areas equipment was to a considerable degree designed in accordance with data secured by experiment at the Springs Mines.

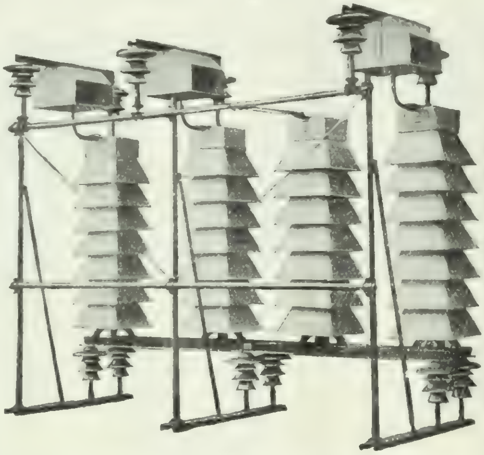
Unsuccessful Tin Company.

Reporting on the liquidation of the Good Hope Tin Mines, Ltd., the joint official liquidators (Messrs. W. E. Atkinson and A. N. Foot) express the opinion that, owing to the declaration of war and the non-success in raising the necessary capital, the directors ought not to have proceeded with the flotation of the company. The liquidators state that a provisional order or liquidation was granted by the Supreme Court on June 8, 1920, and made final on June 15, 1920. The company was formed in 1914 and registered on February 28, 1914, under the Companies Act, but the prospectus was only issued during August, 1914, and a revised prospectus was issued in October, 1916. The report continues: The objects for which the company was formed were, briefly, to acquire from the vendors all the rights originally secured by Andrew Allen under an agreement, dated November 19, 1913, and to develop and prospect the farm at Kuils River in order to obtain tin and similar products. The nominal capital of the company was £50,000, divided into 100,000 shares of 10s. each, 30,000 shares being allotted to the vendors, and 2,100 to the owners of the farm. According to the last balance-sheet issued by the company, the capital issued was 45,120 shares at 10s. each, less calls unpaid, £170 18s. The first directors of the company were N. P. Thesen, P. G. Wege, and John St. Leger. According to the minute book, the first meeting of directors was held on March 3, 1916, when Mr. Andrew Allen was appointed secretary, and the vendor's agreement, dated January 23, 1914, approved. The assets of the company comprise (a) machinery and plant and other movables at Kuils river, and (b) unpaid calls of shareholders.

OXIDE FILM ARRESTERS
Eliminate Lightning Troubles

Six years of successful operation have demonstrated that these Arresters will meet the most exacting requirements and give

REAL PROTECTION.



G.E. Type O.F.—70,000 Volt Outdoor Arrester.

Oxide Film Arresters have been supplied to :

CAPETOWN CORPORATION.
EAST LONDON MUNICIPALITY.
TWEEFONTEIN COLLIERIES.
REZENDE MINES, Etc., Etc.

THEY ARE BUILT FOR BOTH INDOOR AND OUTDOOR SERVICE, IN SIZES FROM 300 VOLTS TO 160,000 VOLTS.

All enquiries welcomed by

SOUTH AFRICAN GENERAL ELECTRIC CO., Ltd.

G.-E. Building, 16, Simmonds St., JOHANNESBURG.
Box 1905. 'Phone 4321.
WITH AGENTS THROUGHOUT SOUTH AFRICA.

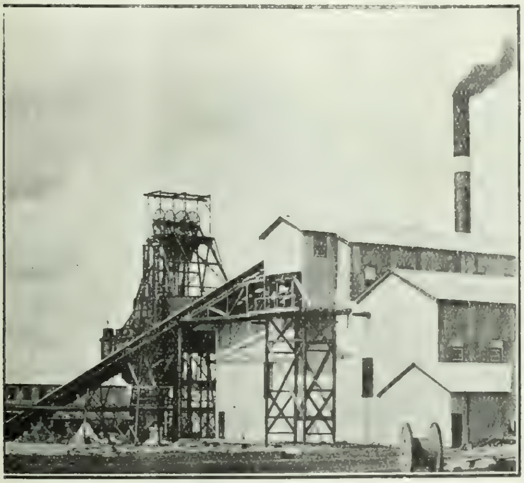
The West Rand's Alluring Outlook.

RANDFONTEIN'S GREATLY IMPROVED RETURNS—LUIPAARDSVLEI TURNING THE CORNER—THE WESTERN RAND ESTATES' PROSPECTS.

One of the most noteworthy features in connection with the recent advance in Rand mining returns undoubtedly has been the marked improvement that has come over West Rand profit earnings and prospects. For the past dozen years mining on the West Rand has been under a cloud. The closing down of the Lancasters, the disappointing results obtained by the Windsor, French Rand, West Roodepoort Deep and Saxon and the failure of Randfontein to achieve anything like the results expected of it until quite recently have been among the chief reasons for the gradual sheathing of that portion of the Witwatersrand Gold Field, which lies to the west of the Witpoorte break in a cloud of depression until just recently, when the substantial decline in working costs has once again made the low grade areas of the Western Rand attractive.

Randfontein Profits.

The prime mover in this pleasing metamorphosis has of course been Randfontein. This great proposition, with a claim area extending along the strike of the Reef from north to south for five miles, and with the largest milling equipment under one roof in the gold mining world, has reaped tremendous benefits from the saner counsels that now prevail in the Witwatersrand Mining Industry. The greatly improved position at Randfontein can be gauged from the following table:



A View of the West Rand Consolidated.

Randfontein Central.

		Revenue.	Yield.	Cost.	Profit.	
1922.	Tons.	£	Dwt	s. d.	£	s. d
Mar. Qr.	76,100	108,778	5.88		—	
Apr.	88,700	120,031	5.82	24/7	11,161	2 6
May	103,500	144,653	5.97	23/9	21,516	4 2
June	119,500	164,437	5.94	22/3	31,499	5 3
July	133,500	190,836	6.17	21/10	45,025	6 9
August	157,000	209,834		19/10	55,684	

Randfontein is, of course, a low grade proposition and whilst the recent notable decline in working expenses has naturally benefited rich as well as poor producers, the decline in operating costs has of course had the most marked and beneficial influence upon the low grade propositions, such as Randfontein, for at mines such as this with a comparatively small margin of profit the success of the proposition obviously must depend upon big tonnage, efficiency and economy.

Randfontein Central has a capital of four and three-quarter millions; it has a debenture debt of over two millions and a loan from the Estates Company of £1,120,000. The Company has paid only one dividend—that of 6d per share in June, 1915. But whilst the Company has still a very big burden of debt to carry the day when it will resume the distribution of profits is not perhaps so far off as some people imagine.

Position at Luipaardsvlei.

Another West Rand proposition which recently has materially improved its position is the Luipaardsvlei Estate. The Durban Deep, the West Rand Consolidated, and in fact every proposition out West has had its fortunes completely changed for the better by recent cost adjustments. But the case of the Luipaardsvlei is particularly worthy of mention. A few months ago it looked as if there was no alternative to closing down for this struggling mine. But at the present time the property may be said to have turned the corner. Fair profits are looming on the horizon and it may be that in the near future the position and outlook will be such that the Board will be justified in undertaking a new scheme of development.

The West Rand in fact seems to be coming into its own again and it can hardly be doubted that unless there is some unexpected set-back the alluring possibilities of the great areas beyond Randfontein such as Luipaardsvlei No. 10 and particularly the Western Rand Estates will be next to receive attention. "Pullingers" in itself constitutes a new gold field of its own and it is not improbable that within the next few months a scheme will be evolved which will have as its ultimate object the prolongation of profitable mining operations on the West Rand by means of the exploitation of the great south-western annexe of this gold field which has been proved by extensive borings to contain the extension of the Main Reef series.

A Mining Digest.

WHAT TO READ IN TECHNICAL PRESS.

Mining.

Mine Labour. *Engineering and Mining Journal Press,* August 5, p. 236.

Gold Prospects in Nigeria. *Mining Magazine,* August p. 80.

Iron and Steel.

Molybdenum Steels. *Iron and Coal Trades Review,* August 11, p. 187

Engineering.

Hecla Works of Hadfields, Ltd. *Iron and Coal Trades Review,* August 11, p. 179.

Economics.

Metals During 1921. *Mining Magazine,* August, p. 84.

Electrical.

Wireless Telephony. *The Engineer,* August 11, p. 145.

A Simple Method of Testing Induction Motors. August 11, p. 192.

The Union's Minerals.

OUTPUT OF £1.022.000.000 TO DATE.

The value of the output of minerals produced by the Union from the earliest date of existing records to the 31st December, 1921, is given by the Government Mining Engineer in his latest annual report as follows:—

Gold ...	*£716,996,958
Silver	2,513,725
Osmiridium	6,811
Diamonds	219,900,588
Coal	56,944,176
Copper	22,921,004
Tin	1,573,858
Antimony	33,279
Arsenic	3,197
Bismuth	300
Chrome Ore	400
Iron Ore	5,310
Lead	123,588
Manganese	4,884
Mercury	5
Nickel	38
Tungsten	6,149
Zinc	50,988
Asbestos	753,759
Corundum	52,173
Graphite	21,040
Iron Pyrites	40,963
Kaolin	84
Magnesite	32,384
Mica	6,173
Mineral Paints	4,547
Salt	99,244
Talc	10,182
Total	£1,022,108,797

*Total value includes gold premium, amounting to £23,393,421, received since 24th July, 1919.

Other products such as clay, stone, lime, gypsum, flint, kieselguhr, verdite, and fertilisers, or salt, are not included in the above table. Figures relating to some of these are collected by the Census Office, and reliable data for others are impossible to obtain.

Hume Pipes.

The Hume Pipe Company (S.A.), Ltd., obtained the order for the whole of the concrete pipes, valves, fittings, etc., in connection with the water supply for Victoria West Municipality. This order, which comprises some 7,200 feet of 12-in. diameter concrete pipe for 75 lb. pressure, was obtained in competition with cast iron and steel pipes. The company have also recently received an order for the whole of the concrete pipes, valves, fittings, meters, etc., in connection with the Reitz Municipal Water Scheme.

RHODESIAN MICA.

Mining Engineer with excellent Clear Ruby Mica, developed to 90 feet, wants £2,000 to work mine and purchase mica to supply users with whom in touch, being £1,000 to owner and £1,000 working capital. Owner to retain half interest. Others moving. Big profits. Can get in first if money available. Apply

"MICA,"
P.O. Box 963, Johannesburg.

Iron and Steel: Canada's Experience.

Our contemporary, the *Canadian Mining Journal*, has the following encouraging reference to the possibilities of a South African iron and steel industry:—

"The domestic requirements of iron and steel products in South Africa is comparatively small. There is no doubt that the production of these materials in the interior of the African continent will expedite its development quite materially and so will help to expand the home market. But it is upon an export market that South Africa's immediate hope for an iron and steel industry commensurate with her extraordinarily favourable conjunction of resources in iron ore and coal must depend. As the future centre of steel production is some hundreds of miles inland, it is considered that only the more valuable finished or semi-finished steel and iron products will find ready sale in the world's markets.

"It is not impossible that there will be, in the future, a repetition in South Africa of the condition that has made the iron ore industry of the Lake Superior region of the United States unique. The Lake Superior ores have an exclusive market throughout the interior of the North American continent, at present based not so much upon any superior quality as upon the natural barriers that exclude competitors. Coal of the right quality and in sufficient quantity is available south of the Lakes, and as a result of the settlement of the continent and the liberal use of iron and steel products by its inhabitants, the iron and steel industry of the Great Lakes region has become the largest in the world. Little of its product reaches the Atlantic or Pacific markets, but it supplies the requirements of the larger part of the continent's hundred-odd million inhabitants. South Africa's may be a similar case, and may in time not only provide the iron and steel used in a large part of the continent, but may constitute the centre of industrial activity, which will in turn provide a ready market for agricultural products and so stimulate a settlement of the vast vacant spaces of the southern part of that continent that now invite the white man's attention. South Africa's present case is analogous to that in which Canada found herself twenty years ago—but quite different from Canada's case to-day. At the opening of the century, it seemed certain that the bonus provided for the production of iron and steel in Canada would result in what the South Africans hope for to-day through the same means. But the two cases differ in the fact that, whereas Canadian calculations were based upon the hope of discovering adequate deposits of iron ore, the South African ore for the purpose is already in sight, in addition to adequate coal reserves."

Progress at the Vaal River Barrage.

Excellent progress continues to be made at the Vaal River barrage. In the last monthly report of the chief engineer laid before the Rand Water Board, it is stated that "the work at the barrage is proceeding in a very satisfactory manner, and the whole of the reinforced concrete work will be completed at the end of the month. It will, however, be necessary to finish off the concrete already put in after the end of August. Twenty-seven gates are in position and twenty-two have been balanced by the counterweights. Two additional gates have been assembled and are ready to be moved into position on the piers, while the two spare gates have also been assembled and lowered into the spare gate grooves. The whole of the operating gear (thirty-six sets) has been fixed on the operating platform. At the present rate of progress the erection of the gates should be completed in September."

The Outlook for Copper.

WHY THE METAL MUST COME INTO ITS OWN AGAIN—AN OPTIMISTIC VIEW.

The price of copper remains in the low sixties, the latest quotations being: Standard copper per ton, £63 5s. cash, £63 10s. forward, and electrolytic £70 15s. A few weeks ago the price rose considerably and a further steady advance was anticipated but on account, no doubt, of the disturbed financial and political situation in Europe the price has been declining. Copper statistics are of vital importance to Southern Africa, for in the Union the future of the Messina and Namaqualand industry obviously must depend on the selling price of the product, and in Rhodesia and especially Katanga copper mining is a branch of the mineral industry of far greater importance than in the Union.

Although there recently have been some pessimistic utterances in regard to the usages and market outlook for this metal, most authorities are unanimous that copper will come into its own again and the following article, which appeared in the issue of the *Engineering and Mining Joural Press* to hand by last mail is of sufficient importance to be quoted at some length. The article is entitled "Copper or Aluminium for Overhead Power Cables" and it contains a pleasing message of hope for copper producers. The article is as follows:

What Electrification Means for Copper. This photo, reproduced from the "S.A. Railways and Harbours Magazine," gives one an idea of the immense quantities of copper cable required for railway electrification.

A large-diameter wire cable is needed in high-tension lines of 150,000 v. and over. Aluminium, being bulky, has been favoured on this account, a steel-cable core being used to give sufficient structural strength. At first much trouble resulted because of slippage between the aluminium and the steel. It was found impossible to design or arrange a clamp that would grip both metals equally. This was eventually overcome by using double clamps, one for the steel core and one for the aluminium casing. Distances approximating 600 ft. between supports were then spanned successfully; and many electrical engineers considered that for the conveyance of high-tension current the aluminium conductor had come to stay. Had this prophecy been fulfilled there would have been a distinct diminution in the demand for copper. However, other drawbacks to the use of aluminium became apparent. The chief engineer of an important western power company states that aluminium is more easily cut and damaged by sharp sand than is copper; that, with large-diameter steel-centred aluminium cable, the softer metal creeps and bunches at various points along the line; that aluminium is more easily burned, and that the extensive contact between galvanised steel and the softer metal invites corrosion.

"The Most Desirable Conductor."

There never has been any doubt as to the suitability of copper as a conductor for current of moderate or low tensions; and for the sake of the copper industry we are glad to note that copper cable is coming into its own again as the most desirable conductor for high-tension lines. Recently 10,000,000 lb. of copper was used to fill an order for a power line in California. The cable was wound on 1,928 reels, each containing half a mile of conductor, and is to be used for one of the two highest-pressure overhead cables in the world—the Pit River transmission line of the Pacific Gas & Electric Co., which will convey electric power at 220,000 volts. To avoid excessive loss by what is known as corona discharge the cable chosen is of the rope-lay type. It is comprised of seven wires, each of seven strands, the individual wires, forty-nine in number, being of about 1-10th inch diameter.

"Copper Needed in Enormous Quantities."

Further utilisation of hydro-electric power is inevitable, especially in the Western and Southern States. Copper is needed in enormous quantities for the construction of generating apparatus and distributing cables. At the thousand and one points of consumption an increasing demand arises for copper and brass utensils, instruments, appliances and fittings. The expansion of the electrical industry is an evidence of extending civilisation, of an economy of natural resources. For the consummation of the ideal of industrial efficiency an increasing amount of copper will be needed, for which no reliable and equally satisfactory material is likely to be substituted.

HADFIELDS LTD.
EAST HECLA & HECLA WORKS, SHEFFIELD, ENGLAND.

Workmen Employed
During the War
Over 15,000.

ERA
Trade Mark.

SOLE MAKERS OF HADFIELD'S PATENT
MANGANESE STEEL

Works Area,
Over 200 Acres.

The Supreme Material for the Wearing Parts of Stone Breaking and Ore Crushing Machinery, etc.

Complete
Stone Breaking
and
Ore Crushing
Plants.

Steel
Castings
and
Forgings
of all descriptions.

Group of Hadfield's Patent "ERA" Manganese Steel & Hadfield's "CHROME" Steel Wearing Parts for Ball Mills and Tube Mills.

Mining Requisites of all kinds, Grizzley Bars, Shoes & Dies, Steel Wheels & Axles, Balls for Ball Mills, etc.

Head Office for South Africa:
46 & 47, CULLINAN BUILDINGS,
JOHANNESBURG.
Phone 5900 Tel. Add.: "Hecla."

Bulawayo Agents:
WHITMORE & JACKSON,
17 & 18, Agency Chambers.

Natal Agents:
THOMAS BARLOW & SONS (S.A.), Ltd.
Smith Street, Durban.

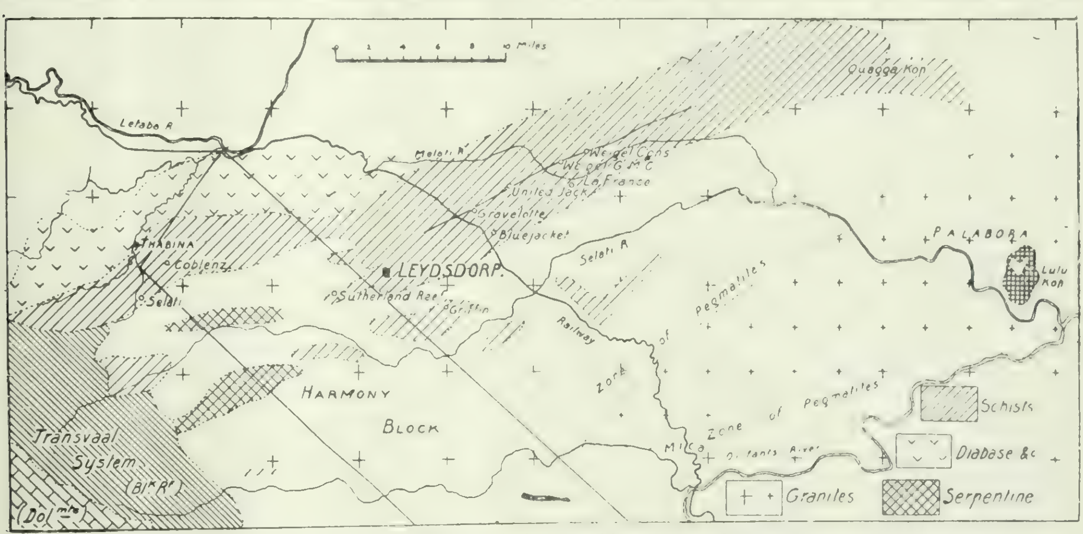
BELL'S UNITED ASBESTOS (Lond.)
AFRICAN AGENCY, LIMITED,
Telephone No. 345, Central, 24-26, CHORLTON CHAMBERS, HARRISON ST., JOHANNESBURG. P.O. Box 2642.
SOLE AGENTS IN SOUTH AFRICA FOR
BELL'S UNITED ASBESTOS CO., LTD., LONDON.
(OLDEST ASBESTOS MANUFACTURERS IN THE WORLD).

VIEW OF GENERAL ABESTOS WORKS, HAREFIELD, MIDDLESEX.
"GLADIATOR" ASBESTOS CEMENT BUILDING MATERIALS.
Over 170 million square feet "Gladiator" Building Material supplied the British Government during the War for Army Hutments, Hospitals, Aerodromes, Munition Factories and the like.—Enquiries invited.

The Treatment of the Murchison Range Gold Ores.

A QUESTION WORTHY OF INVESTIGATION—COPPER AND ANTIMONY—LARGE DEPOSITS.

A very interesting paper was recently read by Mr. H. R. Adam before the C. M. and M. Society on the application of flotation to the antimonial gold ores of the Murchison Range. In the course of his paper Mr. Adam pointed out that some years ago he had reported experiments showing that in the flotation of the stibnite bearing ores of the Murchison Range using hot acid solutions, the bulk of the gold was left with the tailing, e.g., in samples of antimony content between 3 and 28 per cent. Sb., the proportion of gold left with the tailing varied from 60 to 80 per cent. of the total. It was thought that these results might be the basis of a suitable treatment, and a few amalgamation tests on small quantities of ore, from which the stibnite had been removed by flotation, gave reasonably encouraging results. The method of flotation used in the initial experiments was the rather out of date one, in which a 1 or 2% H_2SO_4 solution at about 70° C. is used. This gives an excellent separation of the stibnite, although the addition of oil is required when the proportion of sulphide mineral is at all high; although probably not practically feasible, it is a useful method for investigation purposes, since much coarser material can be dealt with than is the case with the standard mechanical agitation method.



A Geological Map of the Murchison Range Area.

Copper and Gold Values

The copper in these antimonial ores has been remarked on more than once, and it is well known in the district that its presence is an indication of high gold values. It occurs very regularly, but seldom in any quantity above 1%. The mineral in which it occurs is not readily attacked by HCl, so that in decomposing samples for antimony estimations the copper is left with the "silica and insoluble" portion (this, of course, refers to unoxidised sulphide ore). It was suspected that its presence might have some bearing on the low cyanide extractions, and microscopic and chemical examination of concentrate confirmed this to some extent. The unweathered sulphide is a dark grey black mineral, which oxidises in the air much more readily than stibnite yielding copper carbonate and oxide of antimony. An analysis of this mineral separated from the associated stibnite by treatment with HCl, (stibnite is easily decomposed by HCL, but the copper bearing mineral is hardly attacked), gave Cu 41.2%, Sb 23.7%, S 21.6%, the remainder being "insoluble," and a litle iron. This is, roughly, the composition of the mineral Tetrahedrite ($Cu_8 Sb_2 S_7$). A few fragments of the mineral picked out with the forceps gave, on scorification, gold to the value of 2 oz. per ton. 20 grams of the flotation concentrate obtained in No. 3, which, according to the assay, should have contained 1.2 mgms. Au, were treated with HCL to remove stibnite, then with a little mercury to remove any free gold; the residue was then separated from the small proportion of silicious gangue and scorified, giving 1.1 mgm. of gold. This appears to be a case somewhat similar to that mentioned by Green, that is, minute quartz particles with attached gold more or less enclosed by sulphide; even the apparent clean mineral fragments leave a trace of silicious residue on decomposing with nitric acid. White, in discussing Green's results, states what probably applies equally to these antimonial ores: ". . . . behind all apparent difficulties connected with the associated minerals the real obstacle to a high extraction lies in the exceeding smallness of a large portion of the gold particles." In samples from the Murchison Range a few specks of coarse gold can sometimes be seen, but none were observed in any of the samples dealt with in this investigation, and microscopic examination of concentrate washed down to a very small bulk failed to show gold with certainty. Treatment of rich concentrate particles on a slide with HNO_3, however, revealed small particles of gold very distinctly.

A "Small Worker's" Field.

In concluding these notes a few general remarks on the Murchison Range district, based on some personal knowledge, may not be out of place. It is obviously a mining field which at present is regarded as too speculative for the larger mining companies, but for the "small worker" or tributing syndicate, it would be very suitable, provided the great objection of difficult ore treatment were surmounted. It was partly in the hope of making suggestions for a simple treatment scheme, such as could be undertaken by reasonably experienced men that this investiga-

[illegible] Success would [illegible] depend largely on the establishment of a suitably located works where concentrate, obtained either by flotation or simple gravity concentration, could be treated.

In the case of these there is no reason why [illegible] high grade [illegible] should not be profitably [illegible]. Flotation following amalgamation would be required for the best recovery, and there is no particular reason why flotation should not be used on small mines. In any case, the installation of a flotation plant can always be postponed till returns are being obtained by simple amalgamation and gravity concentration. In order to get the best amalgamation results from a simple plant it would be necessary to concentrate as closely as possible, after running the ore over plates and re-grinding this concentrate with mercury, the residue from this second amalgamation could then be sent to the assumed smelting works along with flotation concentrate, if that were produced.

The problem of the treatment of these ores is worthy of considerable investigation because of the great extent of the deposits, but it is useless for people to imagine that ore of 6 or 7 dwt. per ton could be profitably treated; the payable minimum would probably be about twice this figure. It is also useless to count on any considerable revenue from the export of antimony ore; the best thing to do with the antimony would be to recover it as oxide for use as paint.

BOOKS RECEIVED.

We take pleasure in acknowledging receipt of the following:—Imperial Mineral Resources Bureau, Mining Laws of the British Empire and of Foreign Countries—Vol. III. South Africa; Part I., Transvaal. Copies are obtainable at H.M. Stationery Office, and the post free price is £1 10s. 7½d.

Imperial Mineral Resources Bureau Iron Ore, Part 8, Foreign Asia. Copies are obtainable at H.M. Stationery Office, and the post free price is 2s. 9½d.

The Outlook for Transvaal Manufacturers.

COLONEL MENTZ AND MR. SKEELS IN OPTIMISTIC VEIN—MR. DAVIDSON'S REMARKS.

The Minister of Defence, Colonel Mentz, took the place of the Minister of Mines and Industries at the annual meeting of the Transvaal Manufacturers' Association this week. Mr. L. Serocold Skeels, O.B.E., the President of the Association, delivered a very eloquent address, the keynote of which might be described as confidence in the future of our local industries. Mr. Skeels is a thorough going protectionist, but he warns his brother manufacturers that they must "build up a reputation for goods of South African manufacture." Mr. Skeels had painted a dismal picture of the effects of dumping by overseas manufacturers in this country during the past year. The Government has been unable to do much to check the evil, but it is satisfactory to note that Mr. Skeels now regards the outlook with confidence, granted reasonable treatment at the hands of the railways. He looks forward to the opening up of markets for our products in other parts of Africa, and eventually overseas. In regard to the much debated question of Delagoa Bay Mr. Skeels remarked: "There is much loose talk to-day concerning the Government's alleged bluff in regard to an alternative port. We, ourselves, do not subscribe to that view, and we trust that we are correct in assuming that there is no bluff. We understand the position to be that for good and sufficient reason, based on years of experience, the Union Government has decided that through the Railway Administration it must take a far more active part in the management of the port, or if the authorities at Delagoa Bay are not prepared to accede to their wishes, it is intended to develop an alternative port in a region which has been indicated."

The Government's View.

Colonel Mentz replied, as representing the Government, to the remarks of Mr. Skeels. He admitted that local manufacturers had had a bad time, but he expressed the utmost confidence in the future. He came armed with a mass of figures which showed that local industry was advancing despite all drawbacks. The Minister proved himself entirely sympathetic towards the expansion of local effort, and declared that the Prime Minister was working night and day with the same object in view. His views on railway policy, unfortunately, must be regarded as entirely his own, and not binding on the Minister of Railways. The railways, he said, should make no profit. The soundest thing would be for the Railway Administration to bring the cost of transport down to a minimum, so that goods could be carried at the [illegible]. Referring to the iron industry in South Africa, he said that it was largely due to the efforts of the Prime Minister and the Minister of Mines and Industries that bounties were awarded to the iron industry, on the development of which a number of subsidiary industries hung. The Government, he added, was doing all in its power to foster the industry. Generally, it may be said that the speeches at the meeting, while not breaking any new ground, sounded a welcome note of faith in the future of our sorely-tried local industries.

Dumping and the Cement Industry.

Mr. G. Davidson, the general manager of the Pretoria Portland Cement Co., Ltd., made a very telling speech at the meeting in regard to dumping in the cement trade. He showed how the shipping companies carried cement from England to Capetown at much lower cost than the S.A.R. carried the product of the Pretoria or Venterburg Road works to Capetown. Even the cement from the new Cape Portland Cement Works paid more in railage to Capetown than the imported article paid in shipping freight. Mr. Davidson certainly made out a strong case for the local industry. The shipping people have combined with the cement companies in England to capture the coast trade, which should belong to the South African factories. This seems pre-eminently a matter for the Union Board of Trade and Industry.

SCREENING

Order No	Gauge	Space Inch.
S2031	20	$\frac{3}{8}$
S2032	18	
S2033	16	
S2034	15	
S2035	14	
S2036	12	
S2037	10	

2½ Mesh, No. 16, Steel.

Ask us for quotations for all kinds and sizes of Screening; made in our own factories, and promptly delivered.

The S. A. Wire Co., Ltd.

P.O. Box 651, Durban.

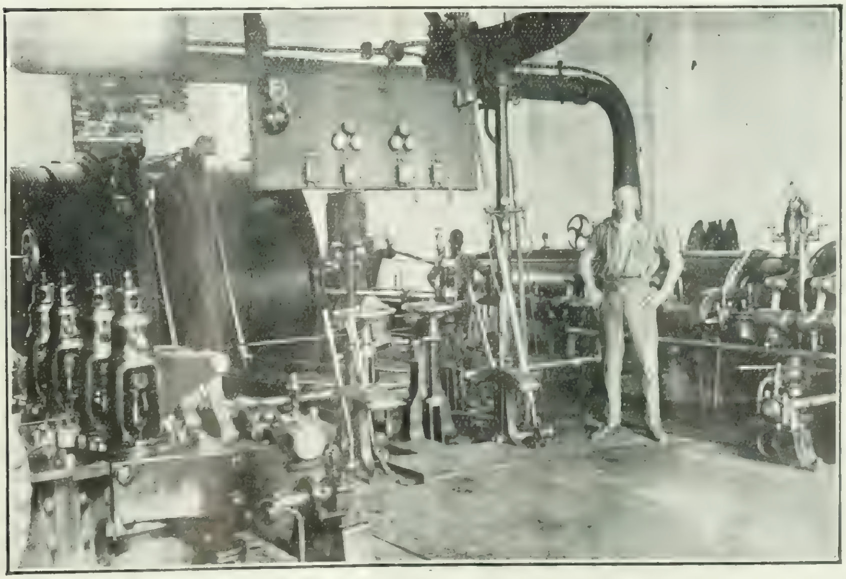
Machine Drills.

MACHINE DRILLS: VARIOUS TYPES CLASSIFIED.

From the annual report of the Government Mining Engineer for 1921 we take the following interesting detailed classification of the types of machine drills installed and the approximate number of each type on Witwatersrand gold mines during the last quarter of the year.

Make	Type	Size	Piston or Hammer	Method of Sludging.	Approximate Number Installed.
Ingersoll Rand Co., Ltd.	3¼-in. piston	3¼ in.	Piston	Separate Jet ..	173
	Leyner	2¾ in.	Hammer	Air and Water .	1,717
	Jack-hammer, B.C.R. 430 ..	2¼ in.	Hammer	Air and Water .	1,667
	Air-feed back stoper, B.C. 21-22 ..	2 in.	Hammer	Air and Water .	290
	Air-feed back stoper C.C.W. 21 ..	2¼ in. to 2¾ in.	Hammer	Water only ..	84
Holman Drill Company	3¼-in. piston	3¼ in.	Piston	Separate jet ..	471
	2¾-in. piston	2¾ in.	Piston	Separate jet ..	1,255
	Leyner	2¾ in.	Hammer	Air and Water .	800
	Air-feed back stoper A.F.W. 2	2 in.	Hammer	Water	279
	Jack-hammer	2 1/16 in. to 2¼ in.	Hammer	Air and Water .	606
Climax Rock Drill and Engineering Works, Ltd.	3¼-in. piston	3¼ in.	Piston	Separate jet ..	216
	2¾-in. piston	2¾ in.	Piston	Separate jet ..	20
	Leyner	2¾ in.	Hammer	Air and Water .	106
	Hydromax	2 1/16 in.	Hammer	Water only	371
	Jack-hammer	2¾ in.	Hammer	Air and Water .	72
Denver Rock Drill Co.	Turbro	2¼ in. to 3¼ in.	Hammer	Air and Water .	24
	Jack-hammer ..	2¾ in.	Hammer	Air and Water .	104
	Air-feed back stoper	2¼ in. to 2¾ in.	Hammer	Water only	66
Atlas Drill Company	Atlas ..	2 in.	Hammer	Water only	30
Mining and Engineering Company, Sheffield	"Meco" Jack hammer	2 5/16 in.	Hammer	Separate jet ..	46
Delfos, Ltd.	Jack hammer	2½ in.	Hammer	Air and Water .	8
Flottman Drill Company	Jack hammer ..	2½ in.	Hammer	Water only	10
Holman Drill Company	Swift attachment	2¾ in.	Piston	Water only	14
	Ferreira attachment	2¾ in.	Piston	Water only	15
				TOTAL DRILLS.	8,444

A New Hoist on the Far East Rand.



Hauling Engine at No. 7 Shaft, Geduld.

Goodrich

"Longlife"
Conveyor Belts

THE Belt for your Plant—"Longlife." It carries on under the worst conditions and gives that satisfaction you expect from a "Goodrich" product.

IF you want lower costs per ton, "Longlife" Conveyor Belt will help you

Plain and
Armoured Hose

FIFTY years of rubber hose knowledge is backing every length of "Goodrich" Hose. A guarantee that you will secure faithful service. Sizes—1 in., $\frac{3}{4}$ in., $\frac{1}{2}$ in.; plain or armoured.

GOODRICH Air and Water Hose will stand the most gruelling tests. Tough, wear resisting, easy to handle, flexible. Does not leak or kink.

"The Right Quality at the Right Price"

Your enquiries solicited:

J. H. Vivian & Co.
MINING MATERIAL MERCHANTS

Tel.: "VIVIANCO."
'Phone.......... 6630
P.O. Box...... 301

GENERAL MINING BUILDING
MAIN STREET................JOHANNESBURG

Points About Robins Conveyor Belt—No. 4

¶ EVERY ROBINS BELT IS GUARANTEED AGAINST DEFECTS OF MANUFACTURE, WORKMANSHIP AND MATERIALS.

¶ Robins Belts are amazingly free from these.

¶ In the 26 year old Robins organisation there is no room for a gang that undercures a belt, or overstretches it, or that uses dirty liners.

¶ The percentage of Robins Belts reported defective is very small indeed; and on those the Robins Company is more than anxious to make good its guarantee.

¶ A direct branch for South Africa assures the customer of prompt handling of any claim through Robins engineers who know a bad belt when they see one and are instructed to treat it as such.

Robins Conveyors (S.A.), Ltd.
(Head Office: Robins Conveying Belt Co., New York, U.S.A.)
BOX 4736, Telephone 4182, JOHANNESBURG
BOX 811, Telephone 3383, DURBAN

Kinghorn

Metallic Valves

SOLE AGENTS:

GEO. CRADOCK
—AND CO. (S.A.), LTD.—
75-77, CULLINAN
BUILDINGS.

P.O. Box 316. Telephone 539.
Tel. Add.: "ROPES."
JOHANNESBURG.

The South African Mining and Engineering Journal.

HEAD OFFICE: 176-180 Stock Exchange Buildings (2nd Floor), Fox Street, JOHANNESBURG, Union of South Africa.

Telephone **913**. P.O. Boxes **963** and **4573**.

Cables and Telegraphic Address: "MINING-JOURNAL."

ANNUAL SUBSCRIPTION RATES: Oversea, £2; Union of South Africa and Rhodesia, £1 10s.; Local Delivery (Town only), £1 6s., payable in advance.

AGENTS FOR GREAT BRITAIN AND AMERICA: Argus South African Newspapers, Ltd., Byron House, 82-85, Fleet Street, London, E.C. 4.

Copies of this Journal are obtainable at all Branches and Agencies of the Central News Agency, Ltd., at all News Agents and Railway Bookstalls throughout South Africa, and at the London Agency as above.

CONTENTS.

PAGE.
New State Areas 1765
The West Rand's Alluring Outlook 1767
A Mining Digest... . 1767
The Union's Minerals . . 1768
Iron and Steel: Canada's Experience 1768
The Outlook for Copper 1769
The Treatment of the Murchison Range Gold Ores... 1771
The Outlook for Transvaal Manufacturers 1772
Engineering Section:
  Machine Drills 1773
Topics of the Week . 1775
Share Market .. . 1779
Rhodesian Section:
  Rhodesia's Mineral Output . 1780
Trade and Industries Section.
  The Week in the Mining Material and Engineering Trades 1781

TOPICS OF THE WEEK.

The Mines' Department Annual Report.

The annual reports for last year of the Secretary for Mines and of the Government Mining Engineer, issued this week, are, as might be expected, mainly concerned with conditions prior to the strike. A mass of valuable information and statistics is, as usual, included with the Blue Book, and extracts therefrom will be found in this and succeeding issues. Mr. Warrington Smyth's report is longer and more detailed than in previous years, and he reviews the strike and the events leading up to it very fully. His conclusion is that "whether the steps taken by the employers to reorganise the mines will be found to be the best possible solution remains to be seen, but it has to be realised that efficiency and yet more efficiency is absolutely necessary if a disastrous collapse of the industry is to be prevented." The Secretary for Mines proceeds to deal with the closing down of Daggafontein Mines last year, and [illegible] it [illegible] importance to the State that the success of this undertaking should be assured, because its failure or partial failure would undoubtedly militate against the [illegible] terms of the State's further mining areas on the Far Eastern Rand." Mr. Warrington Smyth [illegible] the proposed amendments to the mining laws of the Transvaal, and sums up by stating: "The proposals in the draft Bill regarding the reduction in the Crown's share of claim licence moneys, the abolition of the diggers' claims in the future, and the [illegible] of the gold and base metals claim for all purposes are reforms which aim at the encouragement of active prospecting and [illegible] work. They represent a surrender by the Government of some £170,000 of direct revenue, which it is anticipated will be amply made up in indirect taxation from a more flourishing and more rapidly developing industry, which will be taxed on its profits rather than on its energy and expenditure, both of which should be encouraged." In the words of the Secretary for Mines, there can be no doubt that the mineral development of the country is being retarded, and it is hoped that the Bill which has been drafted will soon receive the consideration of Parliament. Sir Robert Kotze's annual report covers a great variety of subjects, and is supplemented by extracts from the reports of the Inspectors of Mines. We hope to quote further from these reports in subsequent issues.

The Diamond Industry.

The value of the diamond output of the Union for 1921 was £11,659,451 less than that for 1920. In the course of his annual report for last year Mr. C. E. H. Langley, the Inspector of Mines at Bloemfontein, has several interesting things to say regarding conditions in the diamond industry.

Prior to the present depression in the diamond trade, he writes, the world conditions were exceptionally favourable for the sale of brilliants. Surplus cash was plentiful in many quarters through high wages being earned and fortunes acquired. The possibilities of spending money during that period were limited, but an outlet was afforded in the purchase of diamonds, a form of luxury which, moreover, may rank as a reasonable asset. The demand by the public for brilliants and competitive measures being resorted to by cutters anxious to buy rough stones to restart their factories in opposition to newly-established firms naturally created abnormal conditions, and all sources of diamonds were exploited to supply the market. When the restrictions imposed by war conditions were removed and the stability of markets in general was assured, other channels of spending and investing money were open, thereby causing the diamond market to be neglected temporarily. It was unfortunate that the demand for diamonds should have slackened off at a time when the market was heavily stocked. Luckily, however, the stock was almost entirely in strong hands. The London Diamond Syndicate, which deals with the production from De Beers, South-West Africa, Premier and Jagersfontein, holds most of the accumulated stocks, and in order to prevent its holdings from depreciating to any serious extent during the present depression it is forced not only to refrain from selling, but to absorb any supplies which may be offered too cheaply. The purchasers of diamonds have not been buying from the Syndicate during the year, as the demand for goods is easily supplied from other sources at prices at which the Syndicate is not prepared to deal. These other sources are the Bolshevik diamonds, which during the last two years to the extent of £7,000,000 have been thrown on the market; the river stones; and lastly, diamonds from small mines and the Belgian Congo. It would not be good policy to attempt to compete with Bolshevik or river goods, as they have had to be sold almost without reserve. The Belgian Congo diamonds being recent discoveries are reaping the benefit of the situation, but ultimately they will have to come into line with the other big producers; if it is found that the fields are sufficiently extensive to warrant them being given a quota, negotiations will be instituted with that object. It is difficult to ascertain, even approximately, the amount of money which has been spent in diamonds during the last year. The rough and cut stones disposed of in America did not amount to more than £6,000,000, which included the prices paid for Bolshevik and other cheap brilliants. In addition to the reduced consumption in America, the present impoverished state of Europe must be taken into consideration. During the last 18 months no country in Europe has been purchasing diamonds, but, on the contrary, the whole of Russia, some of the Balkan States, Germany, Austria, and to some extent France and Italy, have been selling instead of buying diamonds.

Native Recruiting Figures.

The chairman of the Native Recruiting Corporation, Mr. Charles Villiers, had several interesting facts to put before the general meeting at Johannesburg this week. During the year ended June 30, 1922, the total number of natives [illegible] by the [illegible] members of the Native Recruiting Corporation, Ltd., was [illegible] as against [illegible] during the year ended June, 1921, an increase of 21,466. Of this total 147,127 were British South African natives, and [illegible] were Portuguese natives. Of the British South African natives 94,193 were recruited, 38,697 voluntaries, and 14,237 locals. During the previous year the figures for B.S.A. natives were as follows: Recruits 63,708, voluntary 40,393, locals 15,543. These figures, it should be noted, apply to the number of natives recruited and distributed each year. There has been a general increase in the mines native labour supply from all the Corporation's recruiting areas in British South Africa, no doubt largely due to the general depression in other industries.

In the course of his speech, Mr. Villiers showed that the cost of recruiting had been considerably reduced during the ten years' existence of the Native Recruiting Corporation, Ltd. In 1915, when practically the same number of natives were recruited as during the year ending June, 1922, the cost was 83s. 10d. per recruited native, representing 5·752d. per contracted shift, as compared with 62s. 7d. during the year under review, representing 4·470d. per contracted shift, which shows a reduction of 1·282d. per contracted shift, equal to a reduction in expenditure of nearly £100,000. The cost of obtaining the British South African native labour supply—that is, recruited and voluntary labour—during the year under review was 44s. 4d. per native, representing 3·04d. per contracted shift. The cessation of recruiting, and the large exodus of natives from the mines during the first quarter of 1922, had somewhat disorganised recruiting operations, and it would take some months to regularise the flow of labour again. When recruiting was re-opened during the last week in March such large numbers of natives came to work on the mines that by the end of June recruiting had to be considerably restricted, and remains so at the present time.

The chairman went on to state that a very heavy wastage of native labour must be expected during November, December and January, and it was possible that during those months the natives might not come in fast enough to meet the exodus, which would cause a temporary shortage of labour on some of the mines. Mr. Villiers went on to deal with the evidence recently given before the Mining Industry Board in regard to native recruiting, and had no difficulty in answering the critics of the present system. The mines at any rate are satisfied with it, as shown by their decision to carry on the N.R.C. for another period of five years until September 30, 1927.

Delagoa Currency and the Natal Coal Trade.

Mr. James [illegible], M.L.C., Chairman of the National Bank of South Africa, has been visiting Lourenco Marques in connection with the currency muddle at the Portuguese port and, contrary to the general run of wild rumours which are floating around, the two British banks there are not closing. As a correspondent of "The Star" puts it. They have merely restricted their business and intend pursuing a naturally precautious path. Customers will be considered in every way possible. Current accounts that have been kept in British currency for local daily uses have, so it is understood, either been closed or automatically changed so that cheques can be signed for Portuguese money and paid out in such. Many business men and salaried Britishers have simply transferred their balance to banks in the Union. On these they will operate for making payments to people, who cash the cheques outside the Province. Many business transactions will, so it is gathered, be carried on in this way. The question of fixed deposits is another one and will be dealt with when their time expires. Some portions of the new enactment are considered to be unworkable, and it is hoped that they will be amended or withdrawn. It may be that the effect of the new law will prove eventually not to be so staggering in its consequences as was expected, but one cannot get away from the conclusion that the new laws cannot fail to adversely affect the Portuguese port and its working. The coal trade of the Transvaal will obviously not benefit from the new edict, and it is at least reasonable to assume that ships which have been in the habit of calling at Delagoa will be more likely to coal at Durban. The Natal coal trade, in fact, stands to profit, and to profit materially, by the Mozambique Currency Law, and it is quite likely that as a result of this edict the collieries of the Garden Colony will reap a rich harvest in the export trade.

Notes & News.

Springs "No. 3."

The new equipment at No. 3 shaft, Springs Mines, will be completed at the end of this month, and we hope to have in an early issue of the *Journal* an article on the installation there.

* * *

Kasai Diamonds.

A report to the effect that an arrangement of a highly important nature has been come to between South African diamond interests and the owners of the Kasai diamond fields in the Belgian Congo has reached us. The report lacks confirmation, but it emanates from a reliable source.

* * *

A New Tamping Method.

A new method of tamping is being tried at the Luipaardsvlei Estate mine. The tamping material is constructed of porcelain, and is inserted in the hole in the form of a wedge. There is a hole in the porcelain through which the fuse passes. The idea of the device is of course to minimise blow-backs and to secure greater burden of rock. So far it can only be said that the device has given promising results and the progress of further experiments will be watched with interest.

* * *

Head, Wrightson & Co.

At the recent annual general meeting of Messrs. Head, Wrightson & Co., Ltd., Sir Guy Wrightson, Bart., in moving the adoption of the directors' report and balance sheet, remarked on the difficulties contended with through the moulders, miners and engineers' strikes, also the crushing burden of Imperial and local taxation. The firm had during the past year completed the work at Waterloo Station, suspended during the war, and which was opened by Her Majesty the Queen in March, and although erected over the heads of millions of passengers who use this magnificent station, no passenger was injured during the long period of risk. Waterloo Station and Victoria Station are two pieces of work in London of which Messrs. Head, Wrightson & Co. may be justly proud. It has been the policy of the company in the past to extend their capacity for output by acquiring further works during times of depression, and they have taken the opportunity during the present period of slack trade of acquiring an interest in the iron and steel works of Messrs. Wm. Whitwell & Co., Ltd., whose works are next door to them on the Tees. In concluding his remarks, the Chairman said: "No firm can stand still; it can only go forward or backward, and we certainly want to go forward and show our faith in this district, whose geographical position is superior to all other iron and steel centres, where climatic conditions are most suitable and where the efficiency of labour is second to none."

The August Returns.

Although the total gold production for last month had not been declared by the Transvaal Chamber of Mines up to the time of going to press, company returns are available, and, as was anticipated in our last issue, these make a most satisfactory showing. In the case of some companies profits exhibit decreases by comparison with the July figures, but generally speaking, the earnings are higher and over the whole Witwatersrand there is a substantial improvement. Group returns are unavoidably crowded out of this impression of the Journal, but in our next issue there will appear a complete analysis of outputs, costs and profits with comparative figures for the previous month.

* * *

The Mine Workers' Ballot.

The results of the ballot for the election of officials of the South African Mine Workers' Union, which has been superintended by Mr. R. H. Miller, Inspector of White Labour, were announced on Wednesday night. The final counts were as follows:

GENERAL SECRETARY	
J. Cowan ..	1,691
PRESIDENT	
N. Toomey ..	1,421
VICE-PRESIDENT	
W. Price ..	1,536
TREASURER	
J. G. van Gass	1,228

The only change represented in this voting as compared with the last ballot is in the return of Mr. J. Cowan, of Springs, to the position of general secretary of the union in place of Mr. E. S. Hendrickz.

* * *

Record Outputs from Lewis & Marks' Collieries.

Three of Messrs. Lewis & Marks' collieries reached record outputs in the month of August, namely: Cornelia, Largo and Schoongezicht. The latter is a colliery in the Witbank area and has only recently commenced production. It already has contracts in hand in excess of its present output, and plans are in hand for increasing the output to 40,000 tons per month. The following are the individual outputs for August:—Vereeniging Estates (Cornelia Colliery), 57,607 sales tons; Largo Colliery, 41,750 sales tons; Schoongezicht (Witbank) Colliery, 16,233 sales tons; South Rand Colliery, 18,250 sales tons. Total, 133,840 sales tons. Cornelia increased its production from 51,829 for July to 57,607 for last month. Largo, which produced 34,475 tons in July, produced 41,750 tons in August; and Schoongezicht, which increased its return from 10,961 in July to 16,233 for last month. The extra demands made by the gold mines on the power stations to achieve the splendid August gold outputs was the chief cause of the increased production at Cornelia and Largo. The general manager, Mr. Hodges, must be congratulated on these excellent results, which point to all-round increased efficiency.

* * *

New Boring Machine.

Among the many interesting points mentioned by the Inspectors of Mines in their annual reports is a reference by Col. Bottomley to a new boring machine in use at the New Springs Colliery. He says this "special boring machine is now in use at the Springs Colliery for tapping areas known to contain dangerous accumulations of water. The machine has been extensively used in Great Britain for many years, but does not appear to be known in South Africa. The holes are put in with an augur bit and hollow rods, through which water is forced to clear the debris. Seventy feet have been accomplished in one hour's drilling. As a safeguard against accumulations of water or noxious gases, it is of undoubted service and should be more widely known."

Crown Diamonds.

The Crown Diamond people could hardly have chosen a better moment for their new issue of shares than the present. The news from the diamond market is better than it has been since the *débâcle*, and we do not doubt that the Crown Diamond new issue has been fully subscribed. The list closed on Wednesday the 6th. The Consulting Engineer, Mr. Kingston, and one of the directors visited the property last week and express themselves as most favourably impressed with the latest developments. An official statement was issued on Monday to the following effect:—"The most important features of the exploratory and development work for the month of August are that the No. 2 West drive at the 540 ft. level has been extended through the basalt into the new area which was first found at the 440 ft. level. The blue ground has so far been exposed for a distance of only 15 ft., but it closely resembles the blue ground first encountered in the new area above. The drive is being extended. The No. 1 drive at the 540 ft. level has been extended to the contact, and a drive has been carried west along the contact a distance of 140 ft. and is being extended. The contact exposed in this drive lies 80 to 90 feet beyond (that is further south) than the point at which the contact was exposed at the 440 ft. level above. The plane of contact here is found to dip to the south at angles varying from a few degrees to about 60 degrees from the horizontal. The work has not yet advanced far enough to judge the extent of the enlargement of the pipe at this point. Work at a deeper level will be carried out to determine this. The blue ground exposed along the contact in this drive is exceptionally clean, and when the drive has been completed a test washing will be made. A copy of the consulting engineer's report, dated September 2, is being posted to all registered shareholders."

REID BROS.
(S.A.), LIMITED.

Sole Agents for:

CARRON COY.—HAULAGE GEARS, Etc.
ANDERSON, BOYES & COY.—ELECTRIC COAL CUTTERS.
HARDY PATENT PICK COY.—"HARDIAX" AIR COAL CUTTERS.
BLANTYRE ENGINEERING COY.—SCREENING PLANT.
WM. ARNOTT & CO.—CORNISH AND LANCASHIRE BOILERS.
QUASI-ARC ELECTRIC WELDING APPARATUS.
SMALL & PARKES—BELTING, PACKING, Etc.
FINNEY PATENT HAND PUMPS.
WELDLESS STEEL CHAINS.
CHAPMAN DOUBLE BALL BEARINGS.

JOHANNESBURG.
P.O. Box 802 'Phones 6070/1
AND AT DURBAN.

To Lower your Operating Costs:

A Lubrication Audit

Business to-day protects itself against waste and inefficient methods—by audit.

An audit gives an exact picture of present conditions, and points the way to improvement.

We would like to call to your attention the possibilities of a Lubrication Audit in your plant.

See details in column.

Only a Lubrication Audit can give you full information, and open the way to new economies which will soon be reflected in lower operating costs.

Present industrial conditions make it urgent that you take this step toward improved results at once. Ask our nearest branch to-day about the Lubrication Audit.

GARGOYLE

Lubricants

A grade for each type of service

THE LUBRICATION AUDIT

Explained Step by Step (in condensed outline)

INSPECTION:—A thoroughly experienced Vacum Oil Company of S. A. Limited, representative in co-operation with your plant engineer or superintendent makes a careful survey and record of your mechanical equipment and operating conditions.

RECOMMENDATIONS:—We later specify in a written report, the correct oil and the correct application of the oil for the efficient and economical operation of each engine and machine. This report is based on:—

(1). The inspection of the machines in your plant.
(2). Your operating conditions.
(3). Our 25 years of lubricating experience with all types of mechanical equipment under all kinds of operating conditions.
(4). The outstanding experience of the Vacuum Oil Company in manufacturing oils for every lubricating need.

CHECKING:—If, following our recommendations in this audit, you instal our oils, periodical calls will be made to check up the continuance of the desired results.
For the above Free Service address our nearest branch office.

BRANCH OFFICES:

Cape Town
Kimberley
Port Elizabeth
Johannesburg
Bloemfontein
East London
Lourenco Marques.
Pretoria
Mossel Bay
Durban

VACUUM OIL COMPANY OF SOUTH AFRICA, LTD.

STANDARD BANK

OF SOUTH AFRICA, LIMITED.

(With which is incorporated the African Banking Corporation, Ltd.)

Established 1862

Authorised Capital	**£10,000,000**
Subscribed Capital	**£8,916,660**
Paid-up Capital	**£2,229,165**
Reserve Fund	**£2,893,335**

GENERAL BANKING BUSINESS transacted at all Branches and Agencies; DEPOSIT and CURRENT ACCOUNTS opened; PURCHASE and SALE of INVESTMENT SECURITIES effected, etc.

SAVINGS BANK ACCOUNTS opened on terms, particulars of which may be obtained on application.

The BANK is in close touch with TRADE and INDUSTRIAL CONDITIONS, both local and overseas, and special attention is given to COMMERCIAL ENQUIRIES from customers.

EXECUTOR and TRUSTEE business undertaken.

Over 360 Branches and Agencies in Africa.

Agents and Correspondents throughout the world

USE

"PORPOISE"

BRAND

ANTIFRICTION GREASE

Used for years by the majority of Mines all over South Africa.

Manufactured by

South African Lubricants & Chemical Works, Ltd.,

DURBAN & JOHANNESBURG.

Phone 1618, *Johannesburg Branch Office.*

The Week in the Sharemarket.

A SLIGHT REACTION—PUBLIC INTEREST INCREASING IN LONDON—EXCELLENT AUGUST GOLD RETURNS—DIAMONDS FIRM.

As predicted in some of our previous articles, the market has experienced, during the past week, a period of reaction due to over-speculation and forced selling consequent upon the still restricted conditions of finance. London prices have shown gradual improvement, but again finance and exchange have prevented advantage being taken of the better Home quotations. On all sides we hear of the excellent position of the gold industry, which is amply borne out by the remarkable profits for August, while the decreases in working costs on the majority of the mines came as a pleasant surprise, and we can only hope that this most important factor will continue to show reduction, which means a longer life to the Rand and increased employment for both white and coloured labour. The diamond market is very firm, and London quotations for the leaders indicate more activity in this section.

	Fri. 1st.	Sat. 2nd.	Mon 4th	Tues. 5th.	Wed. 6th.	Thurs. 7th
Anglo Amer. Corp.	24 9	25 0	25 6	25 4½	25 6	25 0*
Apex Mines	6 6*	6 6*	7 0†	6 6*	6 6*	
Brakpan Mines		54 0*	53 6*	53 6*	53 6*	54 6
Bushveld Tins	0 3*	0 3*	0 4*	0 3*	0 4*	0 4*
Cinderella Cons.	4 1*	4 3*	4 5*	4 6*	4 3*	
City and Suburban	2 4†	2 2	2 4†	2 2*		2 2*
City Deeps	51 6*	53 0	52 6*	53 0*	54 0	53 6
Con. Diamonds	17 3*	18 6	18 7½	18 7½	18 1*	18 3
Con. Investments				28 0		28 6
Con. Langlaagtes	15 6*	16 0*	18 0†	17 0		17 0*
Con. Main Reefs	13 6*	14 6	14 9	14 9	14 6	14 6
Con. Mines Selection	19 0†	18 0*	19 0†	19 0†		
Coronation Frees.	1 0†			0 9*	1 0†	0 10†
Coronation Synd.	4 9*	5 0*		5 0		4 10*
Crown Diamonds	6 6	6 7	6 9	6 7	6 0	5 10½
Crown Mines	55 0	56 9	57 9	57 0*	57 9	58 3
Daggafontein Mines	3 11*	4 4	4 5	4 4	4 2*	4 1*
East Rand Coals	1 8*	1 9		1 8	1 6*	1 8*
East Rand Deeps	1 6†	1 6†	1 6†	1 6†	1 6†	
East Rand Props.	11 9	12 3	12 6	12 4½	12 4*	12 6
Eastern Golds	0 6*	0 7*		0 6*		0 8†
Ferreira Deeps	9 7½	9 3*	9 6	9 9	9 9†	9 3*
Frank Smith Dia.	4 7½	4 8	5 0	4 11	4 9*	4 6
Geduld Props.	64 6	65 6	65 9*	66 0	66 0	65 6
Glynn's Lydenburgs			17 0†	15 0†	15 0†	15 0†
Government Areas	102 0*	103 6*	103 0*	105 0	105 0	105 0†
Hume Pipes	14 0	14 9†	14 3			14 3
Knight Centrals	4 6*	4 11	4 9*	4 8*	5 0†	5 0†
Lace Props.	11 9†			12 0†	12 0†	10 0*
Leeuwpoort Tins	5 1*	5 9*	5 3*		5 7*	5 9
Luipaardsvlei Ests.	4 6		4 3*		4 6*	4 0*
Lydenburg Farms	4 0*	5 0	5 0†	4 6*	4 6*	4 6*
Middelvlei Ests.	2 1*	2 0	2 0			
Modder B's	33 9	34 6	35 3	34 9	34 9	34 6
Modder Deeps	44 6	45 0*	45 6	46 0	47 0	47 0
Modder Easts	9 1½	9 10½	10 1½	9 10½	9 6	9 [illegible]
Natal Nav. Colls.	29 0†	29 0†	30 0†	30 0†		30 0†
National Banks					£10¼*	£10¼*
New Eland Dias.		35 0*	37 0*	37 6		[illegible]
New Era Cons.		8 0		7 6*	8 0	
New Geduld Deeps	1 [illegible]	1 6*	1 6*	1 6*	1 6*	1 [illegible]
New Kleinfonteins		8 9*	8 9*	9 0	9 0	9 0*
New Modders	83 0	84 0	83 9	84 3	84 9	84 6
New Primrose		5 3*		6 0*		[illegible]
New State Areas	32 0	32 9†	32 9		33 0	34 [illegible]
Nigels				5 0*		6 0
Nourse Mines	17 3*	18 6	18 6	18 1½	18 1½	18 1½
Pretoria Cements	43 6	43 0*	43 [illegible]	43 9*	44 3	43 [illegible]
Rand Collieries	1 9	2 0†	1 9*	2 0†	2 0†	[illegible]
Rand. Central		15 0*	16 0†	16 3	16 6*	16 [illegible]
Rand. Estates	23 6	25 4½	25 6	25 3	25 0	23 6
Rouxville Diamonds	1 4*	1 4*	1 6	1 5*		1 [illegible]
Roberts Victors	8 6	8 6*	8 6*	9 6	9 0*	[illegible]
Rooibergs	2 10	2 10	3 0	3 6*	3 0	
Ryan Nigels		3 0*		4 0†	3 [illegible]	[illegible]
Rose Deeps	14 6*	15 0*				
Simmer and Jacks	4 5	4 5*	4 [illegible]	4 6	4 5*	4 [illegible]
S.A. Breweries		31 3	30 [illegible]	30 0*	30 0*	[illegible] 0*
S.A. Lands	5 0	5 0*	5 [illegible]	5 1*		
Springs Mines	50 6	51 9	52 [illegible]	[illegible] 6*	52 6	[illegible]
Sub Nigels	13 3	13 3	13 3*	13 6	13 3	13 [illegible]
Swaziland Tins		6 0*		[illegible] 6*		
S.A. Alkali	17 6	17 6*	18 0†	17 0*		[illegible]
S.A. Townships	11 0*	11 0*	11 3*	11 6†		
Trans. G.M. Estates	12 6*	13 6	13 0*	13 3*	13 [illegible]	[illegible]
Transvaal Silvers	13 3*	13 6*	13 6	14 0*	14 0*	15 0
Tudors	0 8*	0 9		[illegible] 8*		0 8*

	Fri. 1st	Sat. 2nd	Mon. 4th.	Tues 5th.	Wed. 6th.	Thurs. 7th.
Van Dyk	1 9*	1 10*	2 0†	1 11†	1 10†	1 8
Van Ryn Deeps	70 6*	70 6*	71 6	73 6	74 0	73 6*
Village Deeps	16 3	17 0	17 0	16 9	16 9	16 [illegible]
West Springs	14 6	15 0	14 9	14 9	15 3	[illegible]
West Rand Cons.		5 9†	5 9†	5 0*	5 1	[illegible]
West Rand Estate	[illegible] 0*	[illegible] 3*	[illegible] 3*	[illegible] 3*	[illegible]	[illegible] 3*
Witbank Colls.		35 6†		35 0		30 0*
Witwatersrands				18 0*	18 3*	18 0
Wit. Deeps	17 0	17 6	18 0	18 0	17 9*	17 9*
Zaaiplaats Tins	2 2*	—	2 3	2 4†	2 0*	2 1*
Union 5 per cent.	£102*	£102*	£102*	£102½	£102	£103*
Robinson Deep "B"	9 9*	10 4½	10 3	10 0	10 3	10 3
Robinson Deep "A"	33 0	34 6	34 3	34 0*	34 0	34 6
Reserve Bank	£139*	£140	£140	£140	£140†	£139*

* Buyers. † Sellers.

TRANSVAAL SILVER AND BASE METALS, LTD.

The output of this company for August totalled 102·32 long tons of lead bullion, containing 39,972 ounces of fine silver, representing a total value, at to-days prices of the metals, of approximately £15,657

The Rand's Water Supply.

Advices have been received by the National Trading Co., Cullinan Buildings, Johannesburg, who are contractors to the Rand Water Board for the supply of over 8,000 tons of large diameter steel piping manufactured by the Mannesmann Tube Co., Dusseldorf, for the water supply from Vereeniging to the Rand, stating that the last pipes for this scheme have left the Mannesmann Works, and were shipped during the last few days. This means that the huge contract will be executed and completed well within the period fixed for delivery.

Dormant Mines of the Rand.

The series of articles that recently appeared in these columns dealing with the dormant mines of the Rand has, we are glad to learn from many readers, proved of considerable interest. Dormant mines like the Van Dyk, which could be opened up and proved for a comparatively small expenditure, and Daggafontein, which, in the interests of the whole Far East Rand, must be developed, have already been dealt with. In our next issue we intend to examine the position and prospects of another property which, under the new conditions of greater efficiency and reduced working costs, has now a greatly improved outlook

ADIEU.

Lord Byron, in his impetuous youth, wrote a ditty on this model to the Maid of Athens. Of the two efforts, we prefer the following:]

Mine Promoter, ere we part
Let me keep enough to start
On prosaic work for pay,
By the month or by the day,
In Cathay or Timbuctoo
Where I won't see aught of you.

By those prospects always sold,
Mostly 'cause they had no gold,
By certificates I've got
Which I hoped would make my pot,—
I am finished, I am through,
I have had enough of you.

Mine Promoter! if I go,
Think of me when things are slow—
Though I fly to Timbuctoo
I'll be thinking still of you.
Can I cease to love thee? No!
Mine Promoter! I'll not go.

ANON.

From *The Canadian Mining Journal.*

Rhodesia's Mineral Output.

BIG INCREASE IN CHROME PRODUCTION—PRINCIPAL RETURNS.

The report of the executive presented at the Rhodesia Chamber of Mines and output of gold and other metals and minerals for the month of July, 1922, states, inter alia:—

The following is a summary of native labourers employed on Southern Rhodesian Mines during the months of May and June, 1922:—

	May	June
Local	8,940	9,506
Portuguese Territory	4,197	4,342
Northern Rhodesia	8,689	8,662
Nyasaland	13,186	12,948
Other Sources	449	568
	35,461	36,026

The number employed in June shows a decrease of 3,075 as compared with the corresponding month in 1921.

The total value of the gold and other minerals from Southern Rhodesia for the month of July, 1922, amounted to £412,719, as compared with £311,330 for the previous month of June.

The summary of mineral production is as follows:—

			Value £
Gold ...	fine oz. 54,190.51		263,918*
Silver ...	fine oz. 12,967.44		3,556
Coal (raised 49,973 tons)		(sales)	18,336
Do. used for coke and bricks			4,045
Copper (Blister)	tons 263.15		14,328
Chrome Ore ...	tons 16,802.69		72,954
Asbestos ...	tons 1,442.55		33,735
Arsenic	tons 14.89		366
Mica	4 tons 617 lbs.		1,327
Diamonds	carats 27.25		154
	Total		£412,719

*Includes £23,640 gold premiums.

The feature of Rhodesia's mineral output for July was the huge increase in the production of Chrome Iron Ore. The June return was 300 tons. In July this was increased to 16,802.69 tons, the value being £72,954.

Principal Producers.

The leading producers for the month were:—

Gold.

	Value of Output
Shamva	£35,582
Globe and Phoenix	28,452
Cam and Motor ...	23,716
Falcon	22,972
„ Copper	14,328
„ Silver ...	2,354
Lonely Reef	16,801
Rezende	12,476
Gaika	9,281

Coal.

Wankie Colliery—	
Coal Sales	£18,336
Coke and Bricks	4,045

Chrome Iron Ore.

Rhodesia Chrome Mines	72,954

Asbestos—Bulawayo District.

	Tons.	£	s.	d.
Birthday (Willoughby's Con. Co., Ltd.)	207.15	4,143	0	0
Nil Desperandum (Afr. Asb. Min. Co., Ltd.)	113.39	2,267	16	0
Pagani (J. S. Hancock) ..	28.48	569	13	5
Shabanie (Rhod. & Gen. Asb. Corp., Ltd.)	617.16	15,429	3	9

Lomagundi District.

	Tons.	£	s.	d.
Asbestos (Union & Rhod. Trust Ltd.)	45.00	1,125	0	0

Victoria District.

	Tons.	£	s.	d.
Balmain (Afr. Asb. Min. Co., Ltd.)	34.00	680	0	0
Gath's (Rhod. & Gen. Asb. Corp., Ltd.)	314.68	7,867	0	0
King (Rhod. King Asb. Co., Ltd.)	82.69	1,653	15	0
Totals ...	1,442.55	£33,735	8	2

Northern Rhodesia.

Rhodesia Broken Hill—Lead	31,466
„ —Vanadium	853

Box 3807. Tel. 5892.

WRIGHT'S ROPES

H. ALERS HANKEY - - - Sole Agent.

TRADE AND INDUSTRIES SECTION.

Week in the Mining Material and Engineering Trades.

PRESENT DULLNESS THOUGH DARKEST HOUR BEFORE COMMERCIAL DAWN—IRON AND STEEL—BRITISH CONDITIONS—AMERICAN NOTES—TIMBER AND BUILDING MATERIALS—UNION'S ELEVATORS—UNION'S AUGUST TRADE—ELECTRICAL GOODS—OPTIMISM ON UNION'S FUTURE—KIMBERLEY-BARKLY WEST RAILWAY—RAILWAY REDUCTIONS—RECENT TENDERS CALLED—METAL MARKET QUOTATIONS.

General.

This is the darkest hour before dawn. This sober statement was made this week by one of the shrewdest commercial men on the Rand. He said that unfortunately at the moment we were not moving; there was undoubtedly a lot of work knocking about, although not affecting business to any degree yet. It must be admitted that local merchants were having quite a bad time just at the moment. It was very strange that the community should now be so quiet with the prospects that we have in view. It was, of course, a time for exercising the greatest patience until things came along better, as they were bound sooner or later to do. He thought this was the darkest hour before commercial dawn; the present was a very trying time for all of us, but there was no question whatever that we had struck bedrock so far as depression was concerned, and it was only a matter of time before we arrived at the goal towards which we had been striving for so many months. The commercial community of Johannesburg, he said, does not want any rapid upward movement—no boom—which would, in the light of past event, land us sky-high, only to fall with equal celerity, but a gradual and steady forward and lasting movement. Such an impetus in the Rand's commercial activity he confidently looked forward to, running possibly into two or three years. He thought that the gold mining industry's showing for August would revive hopes more than for a very long time; he, for one, expected that the companies were going to have one of the finest month's results, as far as output is concerned, that they have had for years past, and profits, he thought, were going to be on a scale which we had not seen for a very long time. This would, of course, show the world the economical position of the mines and their ability to pay handsome dividends, and show, further, to investors that from the point of view of profits the Rand mines were well worthy of consideration.

An important mining material importer said there was little to report this week as regards business, the tendency being very quiet both on the Commercial Exchange and elsewhere. He thought, however, that the mines were beginning to be a little more inclined to purchase. Prices were firming up in most instances. Bolts and nuts were going higher. Steel plates were showing a firmer tendency, most people having sold out their stocks, and those merchants who had imported shortly new stocks of steel plates, etc., found that they could not sell them at anything like a reasonable figure, only at a loss. The average price of steel plates to-day, he said, was about 24s. 6d. per 100 lbs. upwards. He had in mind certain firms here who had had for years thousands of 8 x 4 3-16ths, who were selling them now at 17s. 6d. per 100 lbs. These firms were not obliged to sell apart from the perishing nature of the stocks and the commercial necessity to replace stocks with a view to a profit.

One thing very noticeable now, said this important merchant, is the infinitely better transport obtaining in contrast with previous arrangements. One obtains now, he said, shipping facilities very much greater, quicker delivery at the coast is got, and the railway transport and delivery are increased in efficiency to a remarkable extent. He instanced a shipment of metals by the "Durban Castle," which was delivered into a Johannesburg store six days after the boat had arrived at Durban. He said the trouble at Delagoa Bay was making Johannesburg merchants question whether to continue having goods forwarded to that port or not, because no one knows where this currency question is going to land us. One has found, he said, that material coming through Delagoa Bay has saved quite a decent percentage on the shipment, but now the question arises—and no one at the moment seems able to solve it—whether the facilities at Delagoa Bay in respect of this saving will continue the same. Consequently many firms have instructed their shippers so to forward material that local merchants may have the option of off-loading either at Durban or Delagoa Bay, in case the Portuguese people should be inclined to be nasty. It was, he remarked, somewhat peculiar that the Union Government should have overlooked the point that a lot of trade in Durban is lost through sending goods via Delagoa Bay. He thought that in order to obtain that trade the Union Government should reduce Durban charges so as to meet the Lourenço Marques competition.

OSBORN'S
HIGH-GRADE
—TOOLS—
TWIST DRILLS, FILES, PICKS,
SHOVELS, SAWS, HACK-SAWS,
HAMMERS, STONE FORKS, Etc.
SPECIFY
"OSBORN'S"
AND GET THE BEST.
SAMUEL OSBORN (S.A.), LTD.
Box 3162. 'Phone 4673.
JOHANNESBURG.
Works: CLYDE STEEL WORKS, SHEFFIELD.

A [illegible] mining material firm and business [illegible] admittedly quiet at present but they still held the opinion, expressed and reiterated for months past, that things were shaping well. What we are selling now, said the head of this important firm, we are selling at our own price, for a reasonable profit on replacement value. A canny Scot, and an optimistic member of the commercial community, he did not think that we should see that big improvement which we all looked forward to before the end of the year; but, after the mines have declared their working costs and the share market booms accordingly, then——!

Prices are much about the same; iron and timber are holding their own; timber stocks, now very depleted, are expected to be fairly full in about a month's time.

The big task of framing the Mining Industry Board's Report is now in hand and the result is eagerly awaited by the community.

The chairman of the National Bank, Mr. James Leisk, C.M.G., who has recently returned from Lourenco Marques, views the currency situation hopefully, and thinks that it will shortly improve.

The European situation appears at the moment to be moving towards an all-round settlement in respect of the reparations and international debts questions.

According to the recent report of the Recruiting Corporation, there has been a big drop in the cost of recruiting natives for the mines.

Iron and Steel.

The slight improvement mentioned in our last notes appears to have been only the usual end and beginning of the month's orders and has now disappeared; things at the moment are very quiet. The present dullness shoold, however, in the opinion of experts, be only of short duration.

Latest Local Quotations.—Dunswart iron, 18s. to 23s. per 100 lb. Union Steel Corporation, Limited, 19s. to 22s. 6d. Imported iron and steel, flats, rounds and squares, from 25s. 6d. to 35s.; channels and joists, 25s. to 28s.; imported angles, 22s. to 30s.; tee iron, 27s. 6d.; shafting, ⅜ in. down to 3-16 in., 7½d. to 9d. lb. ⅝ to 1½ in., 6½d.; 1¾ in. to 6 in., 4½d.; steel plates, 1-16, [illegible] 3-16, 20s. to 25s.; 10 x 5 and larger, 25s.; ¼ to ¾, 22s. 6d. to 25s.; spring steel, 7d. to 8½d. lb.; bolts and nuts, hexagon, ⅜, 7 5-16d. lb.; ½ in., ⅝ and ¾, 33s. 6d. to 47s. 6d. per 100 lb.; hexagon nuts, ⅜, 8½d.; ½ in., ⅝ and ¾, 5d.; fish plate bolts and nuts, ⅜ in., 6d. lb.; ½ in., 4d. to 4¼d.; ⅝ in. and ¾ in., 3¼d.; dog spikes, 26s. per 100 lb.; rivets, ¼ in., 6 5-16d.; ⅜ in., 5d.; ½ in and ⅝ in., 37s. 6d. to 40s. per 100 lb.; ⅝ in., 50s.; brass rods, ¼ in., 1s. 3d.; ⅜ in., 1s. 6d.; ½ in., 1s.; hexagon brass rods, 1d. lb. extra; copper rods, ⅜ in., 1s. 9d.; ½ in., 1s 10d.; ⅝ and upwards, 1s. 3d. to 1s. 9d. lb.; tool steel, 2s. 6d. to 3s. 3d.; brass sheets, 1s. 10d. to 2s. lb.; copper sheets, ¼ in. to 18 gauge, 1s. 10d. lb.; 20 gauge, 1s. 11d.; 22 gauge to 28 gauge, 2s. lb.; firebox copper, 2s. 1d. lb.; copper tubes, ¼ in. 3s.; ⅜ to ⅝ in., 2s. 4d.; ¾ to 4½ in., from 2s. to 2s. 2d. lb.; phosphor tin, 2s. 7d.; ingot tin (Lamb & Flag), 1s. 11d. lb.; ingot lead £28 per ton; drill steel, 4¾d.; hollow, 7d. to 8d.; 1¼ in., 6½d. to 8d.; wire nails, 23s. to 30s.; shovels, 27s. 6d. to 44s. 6d. doz.; wheelbarrows, 35s. to 42s. 6d.; picks, 32s. 6d. to 40s.; pick handles, 25s. to 30s.; hammer handles, 14 in., 4s. 10d. to 5s.; 18 in., 7s.; 24 in., 8s. 6d. to 10s. 6d.; 30 in., 14s. to 18s.; 36 in., 22s. 6d.; piping, ¾ in., black, 4d.; 1 in., 5½d.; 2 in., 1s. 1d.; galvanised, ¾ in., 5d.; 1 in., 7¾d.; 2 in, 1s. 7d.; ¾ in. steam, 5¾d.; 1 in., 8d.; 2 in., 1s. 6d.; barbed wire, "Shorthorn," 69 lb., 13⅝ gauge, 19s. 6d. to 21s. per coil; plain galvanised fencing wires, No. 8 gauge, 100 lb. coils, 23s. per coil; No. 10 gauge, 100 lb. coils, 24s. 6d. per coil; No. 12 gauge, 100 lb. coils, 26s. 6d. per coil; bulb tee fencing standards, 14 lb., 19s. 6d. per dozen; 12 lb., 23s. 6d. per dozen; black baling wire, 14 gauge, 19s. per coil, 100 lb.; 12 gauge barbed wire, 22s. per coil, 96 lb.; plain wire, No. 8 galvanised 20s. per coil, 100 lb.; fencing standards, 21s. for 12's and 24s. for 11's; droppers, 40s. per 100; screening, 3s. to 9s. 6d. per square yard, [illegible] gauge, 1s. per lb.

British Iron and Steel Prices: Mail Advices.

No. 1 Cleveland is so scarce that even the present relatively moderate demands cannot be met and the price is strong at 95s. per ton, which is 2s. to 2s. 6d. above the usual premium of 5s. between this quality and No. 3 G.M.B. The latter is quoted 88s., No. 4 Foundry Iron is 87s. to 87s. 6d., No. 4 Forge 85s., and mottled and white 80s. The slackness in the hematite trade which were promised the increased support of the furnaces has not materialised. Prices with the present production are unremunerative, and in the absence of improvement it is to be feared that some furnaces will go out. The export price of East Coast mixed numbers is nominally unchanged at 91s. per ton f.o.b. July shipments of pig iron from Middlesbrough amounted to 32,246 tons, as compared with 44,802 in June. Prices have been firm for good average furnace descriptions delivered at works at 27s. Common iron bars have been reduced by 20s. per ton. The exports of manufactured iron and steel from the Tees during July amounted to 34,963 tons, as compared with 27,167 in June.

Tin Plates and Sheets.

The tin plate trade generally is in a very unsatisfactory state just now; export orders are few and Home trade has fallen beyond expectations. Coke tins I.C. 14 x 20 (112 sheets, 108 lbs.), 19s. 6d. to 19s. 7½d. per box; I.C. 28 x 20 (112 sheets, 216 lbs.), 39s. to 39s. 3d. per box; I.C. 16 x 8¾ (124 sheets, 110 lbs.), 19s. 9d. to 19s. 10½d. per box; I.C. 20 x 10 (225 sheets, 156 lbs.) 27s. 6d. to 28s. per box; I.C. squares and odd sizes, 19s. 9d. to 20s. per box; I.C. squares and odd sizes, 19s. 9d. to 20s. per box; all f.o.b. Wales, net cash. Large sheets are in very quiet demand. Mild steel at £12 to £12 5s. per ton basis. Galvanised corrugated sheets are steady at £15 15s. to £16 per ton basis net f.o.b.

Bonus in Tinplate Industry.

The Welsh Tinplate Trade Joint Industrial Council has decided to continue the payment of the 7½ per cent. bonus to the lower-paid workmen till the end of October.

Payment by Results.

It is intended to introduce a system of payment by results in the engineering trades, as a result of negotiations that have been carried on between the Engineering and National Employers' Federation and the Trade Unions. It is understood that when the present 10s. 6d. war bonus is withdrawn the introduction of payment by results will be accompanied by a guarantee that 33⅓ per cent. shall be added to present time rates.

A Wages Advance.

The report of the auditors of the Board of Conciliation and Arbitration for the Manufactured Iron and Steel Trades of the North of England for the two months ended June 20, shows an average net selling price of £11 8s. 0·27d. On this figure the wages of sliding scale gives an advance of 2½ per cent. on puddling and other forge and mill wages, which was to take effect from July 31. The scales of bars are given as 1,998 tons and the average net selling price per ton as £11 7s. 11·32d. per ton, and the sales of angles as 28 tons, the average net selling price being £11.13 7.53d.

Signs of Trade Revival.

The President of the Birmingham Chamber of Commerce, in addressing the members at the end of July, spoke optimistically of the future of British Trade. Most of the difficulties experienced during the last 18 months had now been overcome and exporters now knew exactly how they stood.

Prices of Iron and Steel.

At the beginning of August Staffordshire common bars were quoted at Birmingham at 13s., and galvanised corrugated sheets, 20s. per cwt. Tin plates 20 x 14, 20s. 6d. to 21s. 6d. f.o.r. Birmingham.

The demand for pig iron is only moderate, and it is generally expected that slackness will be witnessed for a time.

Galvanised Sheets.

Conditions in this market are [illegible] firmer. 24 gauge corrugated sheets in bundles are now £15 15s. to £15 17s. 6d.; prices are expected to harden.

Pig Iron.

Business in this section has [illegible] [illegible] less than a fourth of the furnaces in the Midland area are in blast, but the output is sufficient to meet requirements. No. 3, 87s. 6d.; No. 1, 95s.; No. 4 Foundry, 85s.; No. 4 Forge, 84s.; Mottled and white, 80s.

Steel.

This market is inactive. The [illegible] [illegible] is somewhat irregular, Continental sellers disturbing it. A French parcel has been sold at £6 16s. 6d. Supplies are, however, to be had at about £7. Angles are quoted at £9 10s. and tees at £10 10s. Ship plates are unchanged at £10 and boiler plates at £11.

Furnaces.

There are at present 27 furnaces in blast, 7 producing Cleveland, ten hematite, and ten other kinds.

Manufactured Steel and Iron.

The demand in these has not improved. Steel prices are unchanged. Iron bars, however, have been reduced to 20s. per ton.

Sheets.

Only a proportion of the Scottish plant is working. Black sheets range from £10 15s. home and £10 per ton export for 3-16 in. sheets, to £15 15s. home and £14 5s. export for 28 gauge. The price of 28 gauge, plain or corrugated, is £16 5s. per ton.

Belgian Iron and Steel Position.

Makers are still far behind in their deliveries, and are refusing to book further orders. Prices are inclined to stiffen.

Pig Iron.

Prices are firmer, notably No. 3 foundry at 229 francs to 230 francs, and steel-making pig at 210 francs to 215 francs per 1,000 kilos f.o.b. Antwerp.

Finished Iron and Steel.

Business remains very quiet in these. No. 2 iron is quoted at £7 5s., No. 3 at £7 10s., and No. 4 about £9 10s. f.o.b. Antwerp. Steel prices remain at 405 francs to 410 francs for merchant bars, heavy joists at 380 francs to 385 francs; light sections at 400 francs to 405 francs; hoops at 620 francs to 621 francs; cold rolled hoops at 900 francs to 925 francs; all per 1,000 kilos f.o.b. Antwerp.

Plate and Sheets.

Business in these is dull. The basic price for Thomas steel plates is 475 francs per 1,000 kilos f.o.b.

Second-hand Machinery.

Business, said one of our biggest dealers, appears to be bucking up again this week; there have been many orders for new and second-hand requirements. There are still inquiries for small batteries and for small tube mills. Most of the requisitioning propositions are in the line of the Victoria Falls power installation, and these mines have been purchasing motors for power. There have also been inquiries for boilers and engines, several for farming purposes there. Second-hand building material has also been in some requisition for these concerns. Second-hand machinery, said this important dealer, is getting scarcer and scarcer every day, and dealers are holding on to their prices. There have been a few inquiries from the mines north for spares, and small syndicates which are starting up there are purchasing plant.

Iron and Steel Trade Prospects in Britain: Bottom not yet Touched.

Dealing with the trade outlook in the August issue of their monthly circular, Messrs. Hanson Brown & Co., of Middlesbrough, state that opinion on the North-East Coast has been perhaps more pessimistic than elsewhere because the iron and steel trade, upon which this great industrial area so vitally depends, has been more hardly hit than any other industry in the country. It is evident, indeed, in the case of iron and steel, that the bottom has not yet been touched, and that values will yet have to fall considerably further before there can be any substantial revival in business. The world was never in greater need of iron and steel, but it is too sick financially to buy, and unless producers are content to sit down and wait indefinitely for a recovery, they will have to adjust prices to the potential purchasing power of their customers.

The difficulties of adjustment are enormous, and the process could hardly be other than gradual. Progress, however, is being made, and there is a confident expectation of a consequent increase in business in the autumn months. As pointed out last month, however, the iron and steel trade in this district is largely dependent upon shipbuilding, and it is bound to be inactive while that industry remains stagnant.

Lower Prices Needed.

This sufficiently emphasises the argument for lower steel prices. There have been of late flickers of revival even in shipbuilding, and if only lower production costs can be achieved, the slump might prove to be very much less prolonged than many good judges have hitherto thought. There is a vast amount of obsolete and obsolescent tonnage afloat at the present time. While, therefore, it must be admitted that the iron and steel trade has not shared to any very appreciable extent in the recent improvement in trade, the tendency gradually is upward. In this country, at all events, says the monthly circular, we have got over the economic and industrial high falutin' of the post-Armistice period, though the consequences of this period still linger and have by no means completely worked themselves out. But the country, on the whole, has readjusted itself with characteristic sanity to changed conditions, the morbid growths are being steadily cut away, and our industrial and commercial organisation is everywhere healthier and stronger.

American Notes.

Mr. Stevenson, the able American Trade Commissioner, in the course of an interesting chat this week, said probably the biggest factor in America to-day is the industrial situation, and it is beginning to cause considerable worry. Winter, he said, would soon be starting, and supplies of coal are becoming alarmingly low, with the result that it is making America nervous. The United States are afraid to make commitments ahead, and unless there comes a satisfactory solution very shortly, a loss of prosperity seems to loom up right ahead, which is going to be a serious setback. Otherwise the American commercial industry is most satisfactory; our foreign commerce, he said, has improved both in imports and exports, while there is even a shortage of labour in some sections of the country.

The financial position is especially satisfactory, and the crop movement of cotton and corn and wheat is apparently going to pass over without any great strain on the finances; in fact the only difficulty in moving the crops is going to be a lack of transportation facilities. The railroads are now in need of new equipment, and their present rolling stock is not in good condition, a very high percentage of them being forced to keep pegging along, whereas in normal periods they would be laid up for repairs.

American Iron and Steel Position.

Except in one or two isolated cases, iron and steel works have not shut down owing to lack of fuel, but coal production in the vicinity of Pittsburg is almost at a standstill.

Developments in Wrought Iron.

There is a wide demand in the United States for a genuine puddled wrought iron for a variety of uses, and successful experiments have been carried out in New Jersey to produce the same. The cost is said to be sufficiently low to enable manufacturers to compete with steel on a commercial basis.

Pig Iron.

A scarcity has developed in this market. Several of the Buffalo furnaces are still running, but the majority of the Eastern Pennsylvania furnaces have closed down, or are preparing to do so, owing to lack of fuel.

The Bethlehem Company is still operating two furnaces on basic iron; otherwise there are only three in Eastern Pennsylvania running. The price has advanced on the increasing costs of production. No. 2 foundry is quoted at $26 to $27.50, Bessemer at $25, basic at $25 to $26, Western Pennsylvania, $18.50; Birmingham, $27 to $30, Buffalo. The July pig iron output was 2,400,000 tons, August's output is expected to be contracted.

Steel.

Several of the steel-producing centres report a diminishing production. The United States Steel Corporation are still working at 70 to 75 per cent. capacity. The fuel reserves of the entire trades were estimated to be sufficient to last until mid September at the utmost.

The latest cable reports from the United States state that the strike situation is adversely affecting business, and it is thought probable that the Government will ration coal supplies.

The Steel Corporation is operating 60 per cent. of its capacity, while independent concerns are averaging 50 per cent. There is a demand for large bars, plates and shapes, which are now quoted at $2 per 100 lb. Pittsburg wages have been increased 20 per cent, There has been a slump in motor cars, oil and tyres. The July imports total $2,451,000,000, and the exports $305,000,000.

Trade in Canada is satisfactory. The steel companies are operating on a large scale. The Canadian dollar is at par.

Timber and Building Materials.

Business in the timber trade has been good during the past week. Solids (3 x 9 deals) continue scarce and will continue to do so until the arrival of shipments expected about the end of the month.

The brick trade is presently fairly busy, workmen of capacity are fully occupied. Prices of bricks remain much about the same. One large contract, as foreshadowed, has been given out, viz., the Jewish Orphanage on Langerman's Garden, Kensington, which will run into about £30,000.

Timber Prices.—3 x 9 deals, up to 18 teens 1s., over 18 teens, 1s. 1d.; scantlings, 10½d.; beaver boards, 4d.; floorings, 6d. to 6½d.; ceilings, 4¼d. to 4½d.; Oregon, 5s. 6d. a cube; pitch pine, 7s. 6d. to 8s.; corrugated iron, 7⅞d. to 8⅞d. Furniture timber: Burmah teak, 16s. to 17s. 6d. per cube, Johannesburg; American oak, 1 in., 10½d.; 1½ in., 11d.; 2 in., 1s. at coast; Japanese oak, 11½d. at coast; West African mahogany, 1 in. to 4 in. thick, 27s. to 28s. per cube, at coast; Rhodesian mahogany, 9s. per cubic foot at mills; Honduras mahogany, 30s. per cubic foot; American yellow pine, 1s. 4d. per foot of 1 x 12 here; American pine shelving, 10d. per ft.; 3-ply wood, 3 m.m. up to 5 m.m., alder and birch, 4d. to 6½d. per sq. ft.; oak and teak, 3-ply, 10d. per sq. ft. Prices per sq. ft.; oak and teak, 3-ply, 10d. per sq. ft. Prices for bricks are unaltered, namely: Klompje bricks, 25s. per 100 at works; fire-bricks, £10 per 1,000 at works; mixed, 70s.; wire-cuts, £4 10s. to £5; and £5 for pressed per 1,000, at kilns; columns from 20s. to 30s., according to size; roofing tiles, Marseilles, £25 per 1,000 at the works; chimney pots, 12 in., 7s. 6d.; 15 in., 9s.; 18 in., 10s. 6d.; dry red oxide, 14s. per 100 lb.; white lime, 7s.; tan plaster lime, 5s. 3d.; blue lime, 4s. 3d.; cement, 10s. 3d. a bag; [illegible] and roofing, 30s. to 54s. for 1 to 3 ply.

Pretoria Building Trade.

As a result of their dissociating themselves from the Building Workers' Union in Pretoria, about 500 men, bricklayers, plasterers, painters and plumbers, are affected by the lock-out.

Second-hand Iron and Timber.

The demand for second-hand materials, said a prominent dealer, is slightly better with hopes of improvement shortly. In the meantime stocks are scarce at from 5d. to 6d. for timber and 7d. to 8d. for iron. Inquiries are quite good, but money remains very tight, militating against any big improvement at the moment.

Union's Elevators.

The erection of these is, we understand, progressing favourably. The Administrator of the Transvaal (Hon. A. G. Robertson) in opening the Western Transvaal Maize Show at Potchefstroom last week, laid great stress on the future of the Union's elevators and the potential wealth of maize farmers.

Union's Trade: Revenue Collections for August.

The following is a statement of imports, exports and gross revenue collections for August, 1922:

	Value of Imports.	Value of Exports.	Gross Revenue (Duty).
Capetown ...	£829,823	£3,231,856	£119,599
Port Elizabeth	1,366,118	156,446	116,953
East London	419,213	75,756	42,976
Durban	1,189,694	743,965	121,612
Johannesburg	—		64,929
Lourenco Marques	452,839	(c)	16,158
G.P.O.	(a)		22,325
Other Ports and Stations	51,078	34,308	21,880
Totals	£4,308,765 (b)	£4,242,331 (d)	£526,432

Note.—(a) Figures not available; (b) value includes £206,673 imports by the South African Government; (c) Figures not available; (d) value includes £2,886,641 gold exported at Capetown.

Electrical Goods.

There is little to report this week in this connection. Business, said a prominent dealer, had been fair and inquiries well maintained all round. Prices, he said, were inclined to firm all along the line in sympathy with Home quotations. There are no outstanding electrical equipment contracts to report, although several are said to be on the eve of releasement.

Prime Minister's Opinion as to Union's Future.

General Smuts, in a speech at Estcourt, after inspecting the bacon factory there, said that the Union was now moving into smoother waters. After the great struggles we have gone through, he could see better times—times of forward movement in every respect—ahead of us.

Coal Industry.

The Union Railway has recently placed on the Natal section ten large American locomotives of the most powerful type to deal with the heavy traffic, particularly coal, on the steep gradients. This should facilitate the movement of coal to the port and avoid delays at the collieries and also for ships.

Kimberley-Barkly West Railway.

Good progress, it is understood, is being made with this line, ten miles of a track covering 30 miles having already been laid. The chief problem facing the engineers now is the throwing of a bridge over the Vaal River, 700 ft. long. This is to be constructed of concrete and iron girders,

"CAMEL HAIR" BELTING

NOTICE

TO BELTING MANUFACTURERS, DEALERS, AND PURCHASERS.

NOTICE IS HEREBY GIVEN that the term "Camel Hair" applied to Belting is the Trade Name and Registered Trade Mark of F. REDDAWAY & CO., LIMITED. All persons selling or offering for sale Belting as "Camel Hair Belting" which is not of the manufacture of Messrs. F. Reddaway & Co., Limited, will be prosecuted, and the public are warned against purchasing spurious Belting sold under this name or any imitation of the Trade Names or Trade Marks of F. Reddaway & Co., Limited. The "Camel Hair," "Camel" Brand, and "Camel" Belting, can be obtained only from Messrs. F. Reddaway & Co., Limited, or their Representatives.

All Communications to be addressed to:—

BARTLE & COMPANY, LTD.,
LOVEDAY HOUSE.
P.O. BOX 2466. PHONE 3553.
JOHANNESBURG.

If it must be LIGHT—
Make it of —————

ALUMINIUM

For details of uses in your industry, see Applications Book.

○ ○

Free on request.

Standard forms include
INGOT,
for Auto and Aero Castings, Jigs, Driving Pulleys, Vulcanising Moulds, etc.
SHEET,
for Car Panels, Bonnets, Mudguards Cowling, Chemical Vessels, etc.
TUBE,
for Tyre and Hose Mandrils, Cooling Coils, Handrails, etc.
WIRE, BAR and ROD,
for Electrical Conductors, etc.

The British Aluminium Co., Ltd.,
109, Queen Victoria Street, London, England.
Cables: "CRYOLITE, LONDON."

CARBIDE

—— ALL SIZES ——
IN 1, 5, 10, 50 lb. TINS
and 100 lb. DRUMS

Apply: MANAGER,
RAND CARBIDE, LTD.,
SOUTH GERMISTON
'Phone 252 Germiston.

RHODESIA NATIVE TIMBER CONCESSIONS,

ELOFF STREET EXTENSION,
P.O. Box 5530 JOHANNESBURG. 'Phone 2671.

SPECIALITIES. Rhodesian Teak for Sleepers, Flooring, Lagging, and all Mining purposes; is impervious to water, unequalled for Strength and Durability, and low in price.

Rhodesian Mahogany. Specially recommended for Truck Frames, Guide Blocks, Furniture, etc.

PRICES AND ESTIMATES ON APPLICATION.

[illegible] It is hoped to complete the work by April next.

Delagoa Bay Bunkering Trade.

Bunkering at Lourenço Marques during the past week only amounted to 4,000 tons, and the reserve is now [illegible] 3,000 tons. [illegible] have arrived.

Welcome Railway Reductions.

From 9th inst. certain railway reductions come into force which are not unimportant in their incidence, although principally favouring the farmer, these reductions will still be welcomed by the mining trade and others.

British Shipbuilding Revival.

During August there was witnessed a very satisfactory revival of shipbuilding on the Clyde yards, fourteen vessels, aggregating 53,000 tons, having been launched.

British Motor Trade.

It is stated that within the near future very considerable reductions will be made in British construction, amounting perhaps to some 15 to 20 per cent.

Tenders.

Tenders called for by the Municipality of East London for the supply and erection at the Council's West Bank Power Station of water-tube boilers with superheaters, economisers, chain-grate stokers, draught plant, coal elevators, conveyors, feed pumps, pipe work, etc.; steam turbo alternators with condensers and auxiliaries, electric motor-driven centrifugal pumps and pipe work. Tenders per 29th November, 1923.

By the Pretoria Municipality for the supply and erection of high and low tension switchgear, transformers and cables in connection with their electric light and power scheme, per 9th November, 1923.

By the Rand Water Board, in connection with the Vaal River scheme, for 5,000 lineal ft. of 8 and 15-inch diameter reinforced concrete or salt-glazed stoneware pipes, per 12th September.

By the Port Elizabeth Municipality for four miles of electric cable, five transformers, per 2nd October.

Metal Market Quotations.

London, September 4th: Standard copper, £63 5s. cash, £63 15s. forward; electrolytic copper, £70 cash, £70 15s. forward; standard tin, £159 12s. 6d. cash, £160 forward; foreign lead, £24 2s. 6d. cash, £23 7s. 6d. forward; quicksilver, £12 12s. 6d.; bar silver, 35½d.; and bar gold, 92s. 4d. per ounce.

INVESTORS' DIARY.

Forthcoming Company Meetings.

(a) Annual general meeting. (b) special or extraordinary general meeting.

Meetings will be held in Johannesburg unless otherwise stated.

Sept. 20.—Swaziland Tin, Ltd. (a), 12 noon.

Sept. 21.—Transvaal Gold Mining Estates (a).

Sept. 21.—General Mining and Finance Corporation, Ltd., (a), 11 a.m.

Sept. 29.—Simmer and Jack Prop. Mines (a), 11.30 a.m.

Nov. 7.—New Modderfontein (a), 10.30 a.m.

Nov. 7.—Nourse Mines (a), 11.30 a.m.

Nov. 7.—Consolidated Main Reef (a), 12 noon.

Nov. 7.—Modderfontein East (a), 2.30 p.m.

Nov. 17.—Sub Nigel (a), 11.30 a.m.

Dec. 14.—Glynn's Lydenburg, Ltd. (a), 3.30 p.m.

Mining Men and Matters.

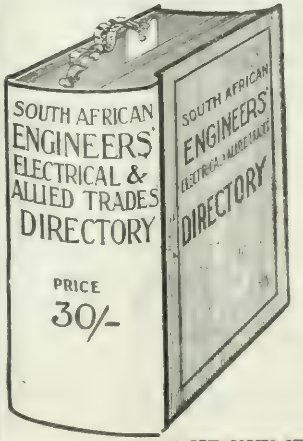
Mr. [illegible], chief electrical engineer to the General Mining and Finance Group, has left on a six months' visit to England.

* * *

Mr. R. T. Mathison, the Vice-Chairman of the Johannesburg Stock Exchange, who was married on Wednesday, has left on a six months' trip to England. Mr. Mathison was entertained by members of the Stock Exchange to dinner prior to his departure, the occasion being marked by many congratulatory speeches.

* * *

Owing to the lack of entries no First Aid competition will be held for surface teams this year, while for the same reason it is necessary for the competition for the underground teams in the two districts to be combined. The two surface teams entered from the Consolidated Main Reef and the Village Deep will therefore be the only representatives of their respective districts in the Shield Competition. By the courtesy of the Directors and Mr. Percy Sherwell, the Manager, the competition for the combined districts will be held at the City Deep, Ltd., Johannesburg, on Sunday, the 10th September. The following underground teams have been entered, the names of the captain being given against each team:—(1) Consolidated Main Reef (J. S. Southward); (2) Crown Mines East (J. A. Harvey); (3) Crown Mines West (W. J. Templar); (4) Crown Mines West (R. V. Walker); (5) Durban R'pt. Deep (A. S. Knight); (6) Robinson G. M. Co. (J. D. Weiblen); (7) Wolhuter G. M. (R. D. Alexander). The competition, which will be held on the surface, will commence at 8.30 a.m. sharp, and every team must be on the property ready to start at 8.15 a.m. Captains of teams will report at 8.15 a.m., when after calling the roll, the order of competition will be notified. Each member of each team will find enclosed a copy of the Rules of the Competition, with which they are expected to be conversant, several alterations having been made since last year. In regard to equipment (Rule 18) which must be strictly observed, lamps will not be required, but *water bottles will be permitted*. Lunch will be provided, by the kindness of the Management for competitors and officials only, to whom tickets will be issued at roll-call. Buses for the City Deep leave the corner of Fox and Rissik Streets at 9.30 a.m., but endeavours are being made to provide a bus to leave earlier, of which due notice will be given in the press. Those interested in the First-aid movement are cordially invited to be present.


SOUTH AFRICAN ENGINEERS' ELECTRICAL & ALLIED TRADES DIRECTORY
PRICE 30/-
SOUTH AFRICAN ENGINEERS' ELECTRICAL & ALLIED TRADES DIRECTORY

INCLUDING
COMPLETE MINING DIRECTORY
OF SOUTH AFRICA.

PUBLIC SUPPLY UNDERTAKINGS
RAILWAYS
TRAMWAYS
SUGAR MILLS
&c. &c.

Published by
S.A. Mining & Engineering Journal
Stock Exchange Building
Johannesburg

A FEW COPIES STILL LEFT.

Luipaardsvlei's Better Outlook—An American View of Rand Metallurgy—Lonely Coy.'s Gas Engines—Motor Transport for the Mines.

1787

The South African
Mining & Engineering Journal
THE ONLY MINING AND ENGINEERING WEEKLY PUBLISHED IN AFRICA.
Established 1891.

Vol XXXIII., Part I JOHANNESBURG, TRANSVAAL, SATURDAY, SEPTEMBER 16, 1922 No. 1616

Revival of Small Mines in the Transvaal.

Examining a Panning on a small Mine in the Northern Transvaal.

A Low Veldt Mill.

The Home of small Gold Mines: a "Four Man" Proposition in Rhodesia.

An Open Working of a small Mine in the North-Eastern Transvaal.

As a consequence of the improved outlook for the gold mining industry resulting from reduced working expenses, more attention is now being paid to the outside districts gold mines, and a number of small properties are being resuscitated. This matter is referred to in an editorial in this issue.

SIEMENS BROTHERS

& CO., LIMITED

RUBBER AND PAPER CABLES.
TELEGRAPH AND TELEPHONE CABLES.
FLEXIBLES.
"STANNOS" WIRES.
ENAMELLED WIRES.

JOINT BOXES.
COMPOUNDS.
TAPES.
CABLE APPLIANCES.
ACCESSORIES.
EBONITE

TELEGRAPHS.
MANUAL TELEPHONES.
AUTOMATIC TELEPHONES.
RAILWAY SIGNALLING.
SHIP SIGNALLING.
MINE AND POWER STATION SIGNALLING.
FIRE ALARMS.

LINE MATERIAL.
TUBULAR POLES.
LATTICE POLES.
INSULATORS.
LINE TOOLS.

FLUID CELLS.
DRY CELLS.
BATTERY CARBONS.

Representatives in South Africa:

A. J. G. SIMPSON, A.M.I.E.E.
African Life Buildings, 85, St. George's St.,
CAPE TOWN.
P.O. Box 239, Cape Town. Telephone 1202 Central.

G. H. B. BERNARD, A.M.I.E.E.
9-10, Cotts Buildings, Rissik and Fox Sts.,
JOHANNESBURG.
P. O. Box 7404, Johannesburg. Telephone 408 Central.

Telegrams : "SIEMENS."

Luipaardsvlei Estate's Much Improved Position.

BRIGHTER PROSPECTS—LOSSES CONVERTED INTO PROFITS—A PROFIT-SHARING EXPERIMENT THAT IS BEARING GOOD RESULTS—LAST MONTH'S MINING PROFIT £2,535—BONUS FOR EMPLOYEES —A NEW EAST SHAFT FOR THE BATTERY REEF?—SOME FACTS AND FIGURES ABOUT AN IMPROVING VENTURE.

In recent issues articles on dormant mines of the Rand have appeared and have engaged a great deal of public attention. Our last impression announced that we should this week examine the position and prospects of another property which under the new conditions of greater efficiency and reduced working costs has now a greatly improved outlook. The concern in question is the Luipaardsvlei Estate and Gold Mining Company. It is not a dormant mine, inasmuch as it has been crushing for several years past. But it always has been a low grade concern, a mine in fact of small margins, and just prior to the outbreak of the strike it looked indeed as if the Luipaardsvlei Company had come to the end of its tether and that nothing could avert closing down. In the last month of 1921 the company secured a yield of 19s. 4d. per ton, and as working costs absorbed 22s. 5d. per ton operations resulted in a loss for the month of no less than £3,221, or 3s. 1d. per ton milled.

Position at end cf 1921.

At the end of December last the company was in a position to meet interest on the debentures and to effect redemption of a certain number of these debentures. The calamitous strike then intervened and severely affected the fortunes of this struggling company. In the first quarter of the year, for instance, the company lost £14,973. After the strike efforts were made to resuscitate the venture, but after all the chaos created by the period of unrest obviously this could not be done without incurring losses. In May, for instance, the company incurred a further loss on mining operations of £4,451, and in June this was £1,385. The July results were 19,323 tons crushed for a revenue of £19,206 and a loss of £411. These figures do not include sundry revenue from licences, etc.

Encouraging Figures for August.

Last month the company turned the corner. It crushed 21,000 tons for a recovery of 4·37 dwt. per ton, and with working costs at 17s. 9d. per ton it earned a mining profit of £2,535. To this must be added sundry revenue amounting to £750, so that the company's total earning was over £3,000. The Luipaardsvlei is an essentially low grade venture. It cannot afford to pay the relatively high wages of the richer mines, and the company has therefore come to an arrangement with its employees whereby they work at a basic rate of 16s. 8d. per shift with bonus additions according to the company's earnings.

How Employees Have Benefited.

It is a condition of the terms of engagement and wages that if the mining profit exceeds £2,382 in any month employees shall have a bonus of 5 per cent. added to their basic wage, and that if the monthly mining profit exceeds £2,882 then the bonus shall be increased to 10 per cent. Last month the company earned for the first time under the new scheme more than the amount required in order to pay the 5 per cent. bonus, and if the company could increase the tonnage milled up to the full capacity of the plant, namely, 22,500 tons per month, and could "squeeze" another ½ dwt. or so out of its ore, there seems to be no reason why the mining profits should not be raised sufficiently to enable the company to pay the 10 per cent. bonus to its workmen. In this direction we consider lies great hope for the Rand's low grade ventures, and the Luipaardsvlei wages experiment, which introduces a factor of profit-earning, should receive encouragement from all concerned with the problem of keeping low grade mines going, which in other words means the earning of adequate profits from propositions with ore going no more than 5 or 6 dwt. per ton. Particularly does the experiment call for support from the workmen themselves. Here is a concrete case of what is essentially a poor mine which cannot afford to pay standard wages, but which can by everybody putting their backs into the venture earn profits which admit of the management giving the employees a substantial monthly bonus. It is in this direction, we believe, that the Rand may best look for a solution of the troubles of its low grade mines.

Promise of the Battery Reef.

The life of the Luipaardsvlei is fortunately a long one, and the mine has at present its full complement of over 2,000 natives. If the London Board can raise sufficient capital to sink and equip a new east shaft on the Battery Reef, where there is plenty of good ore going 6½ dwt. per ton over 48 inches, the mine should go ahead again. In this connection it may be pointed out that the Battery Reef lies at no great depth, and that this scheme probably could be carried out for a moderate expenditure of, say, from £15,000 to £20,000. It looks, indeed, as if the Luipaardsvlei Estate and Gold Mining Company, after a desperate struggle with adverse conditions, has by virtue of reduced working expenditure and the adoption of a rate of wages compatible with the low grade character of the proposition (which rate is subject to bonus additions according to profit), at last regained a position of stability and modfied prosperity such as it has not possessed for several years past.

The Coy.'s History, Capital and Operations.

A few facts and figures concerning this property should here be of interest. The head office of the company is in London, and there is a local board. The issued capital is £472,012 in £1 shares fully paid, and the outstanding debenture debt at the present moment is about £45,000. The company was registered on April 10, 1896, as a reconstruction of a company of the same name registered on May 5, 1888, to acquire from the Gold Fields of South Africa, Ltd., the freehold gold-bearing farm Luipaard's Vlei No. 225, area 6,500 acres, about 16 miles west of Johannesburg, Witwatersrand. The old company sold portions of the property to the Battery Reef, West Battery Reef, Mynpacht (Luipaard's Vlei), and Midas Battery Reef Companies, but the properties of the first three were afterwards repurchased. In March, 1909, the undertaking of the Windsor Gold Mines, Ltd. (including £50,000 liabilities), was acquired for 73,412 fully-paid £1 shares; the assets comprised 285 mining claims. During 1916, 28 mining claims to the east were acquired from the French Rand G.M. Co., Ltd., and in November, 1919, a further 5 claims were purchased. An additional 22 claims on the western boundary were pegged in December, 1920, and it is estimated there are 150,000 tons of developed payable ore and 110,000 tons undeveloped ore available in these claims. In addition to the freehold of the entire farm, which yields a revenue of about £10,000 per annum from licences, and on which the company has a township and a large plantation of trees, the company now owns 866 mining claims. Crushing started in February, 1898, with a dry mill and cyanide works, but stopped in

January, 1899, pending the development of the mine in the deeper levels. Crushing recommenced April, 1906. A 60-stamp mill is now erected, also five tube mills and cyanide and slimes plant; capacity 22,500 tons monthly. Operating results: For the year ending June 30, 1920, [illegible] tons yielded £270,027; working loss £5,928, or 6d. per ton. For the year ending June 30, 1921, 206,695 tons yielded £269,867; working profit £16,155, or 1s. 7d.; costs 24s. 6d. per ton. The estimated ore reserves at June 30, 1920, were 701,847 tons fully developed, averaging 5·2 dwt. Position at June 30, 1921, 624,700 tons, value 5·2 dwt., also stoped tons, value 5·7 dwt. (excluding the contents of 22 claims as mentioned above). The company has paid dividends as under: For 1907-8, 10 per cent.; 1908-9, 5 per cent.; 1910-14, nil; 1914-15, 3¾ per cent.; 1915-16, 5 per cent.; 1916-17 to 1920-21, nil. Share prices, 1919: highest, 8s.; lowest, 2s.; 1920: highest, 8s. 4½d.; lowest, 1s. 6d.; 1921: highest, 4s. 9d.; lowest, 7½d. Latest price, 4s. 9d.—

A Much Improved Outlook.

Taking everything into account, it certainly looks as if the Luipaardsvlei had entered upon a more hopeful period than it has enjoyed recently, and the shares do not look dear at 4s. 9d. It must, of course, be remembered that the proposition is essentially low grade, and is unable to bear exorbitant taxation either in respect of Government (Phthisis, etc.) or municipal taxation. Provided the company has no onerous burdens thrust upon it and is able to work out its own economic salvation, the mine may yet again distribute profits amongst shareholders and at the same time pay a fair wage to a considerable number of white employees, whilst it need hardly be stated that its presence and activity are of the utmost importance to the town of Krugersdorp, on the borders of which it stands. And if the company is able to open up its eastern section on the Battery Reef by means of a new shaft the Luipaardsvlei may yet become a producer and profit-earner of not inconsiderable importance.

Progress of the Iron and Steel Industry

OFFICIAL REVIEW BY GOVERNMENT MINING ENGINEER OF THE DIFFERENT COMPANIES.

In the course of his annual report the Government Mining Engineer gives the following particulars of the progress of iron and steel works in the Union:—

The Union Steel Corporation (of South Africa), Ltd.

The works of this company produced during the year 14,434 tons of steel of a total value of £361,468. The output comprised 11,573 tons of open-hearth steel from scrap, etc., consisting of rounds, squares, flats, angles, tube-bars, fence posts and fish plates of the value of £271,048, and, in addition, 2,861 tons of steel from the 3½-ton Heroult electric furnace of the value of £87,420. The product of the Heroult furnace is utilised for steel castings and shoes and dies for the mines. From the cupola 242 tons of iron castings were produced of the value of £4,855. The average labour employed was 219 white (including staff) and 450 coloured persons. A new 22-inch mill is being installed to enable the corporation to roll heavier sections of angles, girders, channels, etc., from 20 to 30 lb. per foot, and rails up to 60 lb. A new 25-ton Siemens open-hearth furnace has been erected and when in full running order the output of these works will be about 2,500 tons per month. It is also proposed to put down soaking pits. This company successfully competed for the order of the whole of the reinforcing steel required for the thirty-six Government grain elevators to be erected in the Union. Large quantities of steel have already been delivered.

The South African Iron and Steel Corporation, Ltd.

This company carried on operations only during the first four months of the year, and the output for that period was 1,148 tons of pig iron of the value of £11,480. The plant of this company consists of a blast furnace capable of producing 10 to 11 tons of pig iron a day, and was erected for the sole purpose of testing the feasibility of making commercial pig iron from South African iron ores. A complete foundry is also attached to these works. The proposed new works when completed will consist of a plant capable of producing 75,000 tons of iron and steel per annum, but at present the works are closed down for want of capital.

The Dunswart Iron and Steel Works, Ltd.

During the year these works produced 5,355 tons of iron of the value of £123,165. The average labour employed was 50 white and 240 coloured persons. The 6 to 7-ton Heroult electric furnace, erected during the year, has not yet been put into operation owing to the recent strike. Current is obtained from a sub-station of the Victoria Falls Power Company at 6,600 volts pressure. This is stepped down to 2,200 volts, and again to 85 volts for use in the furnace, where it is conducted through three 9-inch graphite electrodes, the current being automatically controlled by a Thiery regulator up to 8,000 amperes. Within four to five hours of switching on the current the steel will be ready for pouring into ingots, which are 7½ inches at the top, 3 feet 6 inches long, and 6½ inches at the bottom, and weigh 600 lb. It is intended later on to manufacture steel castings up to 7 tons in weight and the works are designed for this purpose. In this steel section is erected a 20-ton electric crane. Under normal conditions these works will have an output of 500 to 600 tons per month. A new 3-roll high 18-inch cogging mill is in course of erection, capable of turning out 6-inch squares, 6-inch angles, 10-inch flats, 6-inch rounds, and other sections as required. It will be driven by a 600 h.p. motor running at 360 revolutions per minute and driving the mill at 150 revolutions per minute by means of ropes. In addition, the works have a hot saw for cutting the heated metal, shears for cutting cold billets up to 4 inches, and pumping plant, all driven by independent electric motors.

The Witwatersrand Co-operative Smelting Works, Ltd.

No further additions were made to the plant of this company during the year. The total output of shoes and dies was 1,296 tons of the value of £25,900. The average labour employed was six white and 31 coloured persons. A new plant has been erected at Driehoek and the old plant has been transferred to this site. When in full running order the output of these works will be about 2,400 tons of steel per annum.

The Newcastle Iron and Steel Works, Ltd.

The plant of this company was completed during the year, and consists of one blast furnace with a capacity of 150 tons per day, two Cowper stoves, two Fraser and Chalmers blowing engines and machinery for bricks with a capacity of 18,000 per day. The blast furnace is not yet in operation, the works being at present closed down for want of working capital.

The Transvaal Blast Furnace Co., Ltd.

This company has ceased operations and gone into liquidation.

Summarising the operations particularised above it is found that 22,475 tons of iron and steel goods were produced in the Union during the year 1921, the value of the product being £526,868 as compared with 21,988 tons of value of £538,554 during 1920. The industry gave employment to an average of 297 white persons and 803 coloured persons during the year.

Design of the New State Areas Plant.

AMERICAN CRITICISMS—THE "NEW METALLURGY" AS VIEWED ACROSS THE ATLANTIC—LENGTH OF TUBE MILLS DISCUSSED—LOCAL CONDITIONS MISINTERPRETED.

An article which appeared in an issue of this journal earlier in the year described the reduction and treatment plant of the New State Areas. In the following issue we published a flow sheet of the equipment so that it should be possible to obtain from the article and the flow sheet a fairly clear idea of the metallurgical scheme which is to be put into commission early next year. It is therefore rather surprising to find that our valued technical American contemporary, the *Engineering and Mining Journal Press*, has made some rather confusing criticisms of the projected equipment and practice at the New States and of our article. The leader in the number of the *Engineering and Mining Journal Press* to hand by last mail does not acknowledge the article and flow sheet which appeared in the S.A. MINING JOURNAL. But our New York contemporary's editorial entitled "Rand Metallurgical Practice" seems to be based on our own article, and there are one or two points in that criticism which we should like to try and explain.

An American View.

In the course of its article the *Engineering and Mining Journal Press* states: Details of the design of the New State Areas milling plant in the Far East Rand were published in our issue of June 17. The primary breaking to 2½-in. cubes will be done in jaw crushers; then comes secondary reduction to 1 in., in disc-crushers—machines that are used to advantage in the great bulk-ore leaching plants of Chuquicamata and Ajo; also in a large number of stone-dressing plants, where the production of a minimum of unsaleable undersize is desirable. Ore dressers will be inclined to inquire as to the advantage of selecting for the New State Areas plant a closed type of machine for secondary crushing. The ore is to be all-slimed, so that no advantage can be taken of the characteristic feature of the product from the disc-crusher. Further, it matters not whether much or little slime be formed during secondary crushing; a large proportion might be desirable if it could be produced cheaply. The second main advantage in the use of the disc-crusher is therefore lost.

Large Tube Mills Criticised.

The feed to the tube mills is to be 1 in. and under. This must be reduced to slime. Large tube mills are to be provided. The weak feature of the long axial-discharge, cylindrical tube mill is seen in the fact that all the pulp must travel the full length of the apparatus before it can be discharged. With outside mechanical classification it is obvious that a comparatively large tonnage of ore that is ground almost fine enough will be returned continuously to the mill. This may be reduced to the desired size within a short distance of the feed end, but it cannot escape there. In the New State Areas plant it must travel the full length of 20 ft., hindering the reduction of coarser particles, absorbing power and being ground to an unwanted fineness. According to the account we published, "Ore will enter the water circuit in the crushers, and as soon as the pulp reaches the tube mills it will come into the cyanide circuit and will be rushed in a cyanide solution." This is inexplicable. Jaw crushers and disc-crushers usually operate dry. Parts of the account from which we obtained our information may be in error, although both the consulting engineer and the consulting metallurgist to the Consolidated Investment Group are named as having supplied the information. The statement of responsibility for the data is followed by the remark that, "This plant marks the beginning of a new epoch in the metallurgy of gold, not only in South Africa but probably in the world generally." To this many metallurgists will demur; we are inclined to think that the newer Modderfontein plants in the Far East Rand are excellent examples of recent advance in the metallurgy of gold. The engineers of the Witwatersrand have earned a position of well-merited eminence in the profession, largely because of the frank and scientific manner in which they have disseminated information dealing with research, as well as with the metallurgical results obtained on the greatest goldfield in the world. The New State Areas plant may mark an advance in local technical progress on a comparatively low-grade ore; we trust that it will. But if the information published during actual operation is no more complete than that which is available at the present time, many will be inclined to discount the claims being made as to the influence of the so-called "new metallurgy" on the treatment of gold ore throughout the world.

Some Points Explained.

To this the SOUTH AFRICAN MINING JOURNAL would reply that the design of the New State Areas plant was decided on only after most close and painstaking investigation and after exhaustive experiments had been carried out at the new Springs Mines equipment. With regard to the length of the tube mills it may be pointed out that it has been found by experiment that with a rapid discharge of pulp from the tube mill, the tendency is to increase the wear at the outlet end. This points to effective work being carried on at least up to 20 ft. Factors to be taken into consideration are size of motor, feed moisture, size of scoop, and type of screen used. Rapidity of discharge, ensuring the elimination of the ground particle as soon as possible, is the idea aimed at. "Over-crushing" is objected to, either in crushers or tubes. The water circuit embodies sorting and crushing. "Crushers" is a loose term employed on the Witwatersrand in describing a sorting and crushing station. Waste sorted will probably be about 20 per cent. of the total ore sent to the station, all of which has to be washed to expose the reef matter. The washings are de-watered before entering the cyanide circuit, and the water returned to the crusher and sorting station. It is also common practice to damp the crushers with water sprays in South Africa. The main points of departure from current practice are elimination of stamps, amalgamation, and sand dump, and our contemporary's reference to the "newer Modderfontein plants in the Far East Rand," which embody stamps, amalgamation tables and sands treatment, is not understood. We admit that these are "excellent examples of recent advance in the metallurgy of gold." We have never said anything to the contrary. But this fact in no way alters the truth of our assertion that the New States plant will mark a new epoch in the metallurgy of gold in South Africa. Our contemporary's criticisms appear mainly to result from a lack of understanding of local conditions, and the points which we have endeavoured to make here may assist our trans-Atlantic critics the better to appreciate some of the circumstances which have guided the metallurgical and engineering staffs of the Johannesburg Consolidated Investment Company in designing the New State Areas plant.

Far Western Rand Activity.

It is reported that negotiations are on the tapis for the acquiring of the farm Driefontein 614, known as "Harrison's Options," and the farm Driefontein 591, known as the "Western Rand Gold and Land Co.," with a view to thoroughly prospecting them for the Main Reef series. The late Mr. J. S. Curtis reported that the Main Reef series undoubtedly ran through these two farms. Driefontein 614 immediately adjoins the western boundary of the Western Rand Estates Co. (Pullingers), and Driefontein 591 immediately adjoins 614. It is reported that under the proposed scheme the £30 fully paid shares in the Western Rand Gold and Land Co. will receive 150 fully paid £1 shares in the parent company and certain options. The ground to be acquired will give about 1,500 claims on the line of the reef after allowing 80 per cent. for the Government.

HEAD, WRIGHTSON & CO. (SOUTH AFRICA), Ltd.

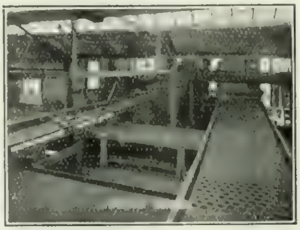
P.O. Box 1034. JOHANNESBURG. Telephone 3524.

Specialists in

Colliery Plant, Gold Mining Plant,
Coal Washers, Conveying Plant,
Headgears, Bins and all classes of Structural Steelwork

Registered Office and Works:

Teesdale Ironworks,
Thornaby-on-Tees.
Stockton Forge Works
and
Egglescliffe Foundry,
Stockton-on-Tees.



South African Office:

63-66, STANDARD BANK CHAMBERS,

Commissioner Street, JOHANNESBURG.

Telegrams: "NIVONIA," Johannesburg.
Phones: 2196,—2197,—2198

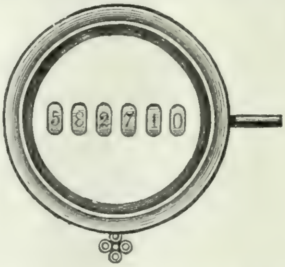
J. & R. NIVEN, Ltd.,

ENGINEERS,
CONTRACTORS,
MERCHANTS.

BALATA BELTING
JAMES DAWSON & SON, Ltd.
BITUMEN SHEETING
GEO. M. CALLENDER & CO., Ltd.
BOILERS
PENMAN & CO., Ltd.
COAL CUTTERS AND CONVEYORS
JEFFREY MANUFACTURING CO.
COLLIERY PLANT
CAMPBELL, BINNIE, REID & CO.
DRILL STEEL
JOHN NICHOLSON & SONS, Ltd.
ENGINES, LOCOMOTIVES
ANDREW BARCLAY, SONS & CO., Ltd.
ELECTRIC LIFTS
A. & P. STEVEN, GLASGOW.
CRANES
BUTTERS BROS., GLASGOW.
HOSE, VALVES, SHEET RUBBER
THE LEYLAND & BIRMINGHAM RUBBER CO., Ltd.
LUBRICANTS
THOS. HINSHELWOOD & CO., Ltd
STEEL SCREENING
THOS. LOCKER & CO., Ltd.

Barsdorf's Buildings, Marshall Street,
JOHANNESBURG.

JOHN DAVIS & SON (DERBY), LTD.



REVOLUTION COUNTERS

LIKE ALL OF THE MANY OTHER WELL-KNOWN DAVIS-MADE PRODUCTS, THIS HARDING'S PATTERN COUNTER IS THOROUGHLY RELIABLE, WELL MADE THROUGHOUT, AND BUILT TO GIVE LONG SERVICE. THE CASES ARE ROUND, THE WHEELS ARE OF PORCELAIN, AND THE FIGURES ARE BURNT IN. TWO SIZES ARE STOCKED: 5 INCH DIAMETER WITH SIX FIGURES, ROTARY OR RECIPROCATING TYPE; AND 9 INCH WITH SEVEN FIGURES, WHICH CAN BE SET BACK TO ZERO.

SOLE AGENTS FOR SOUTH AFRICA:

BARTLE & COMPANY, LTD.,

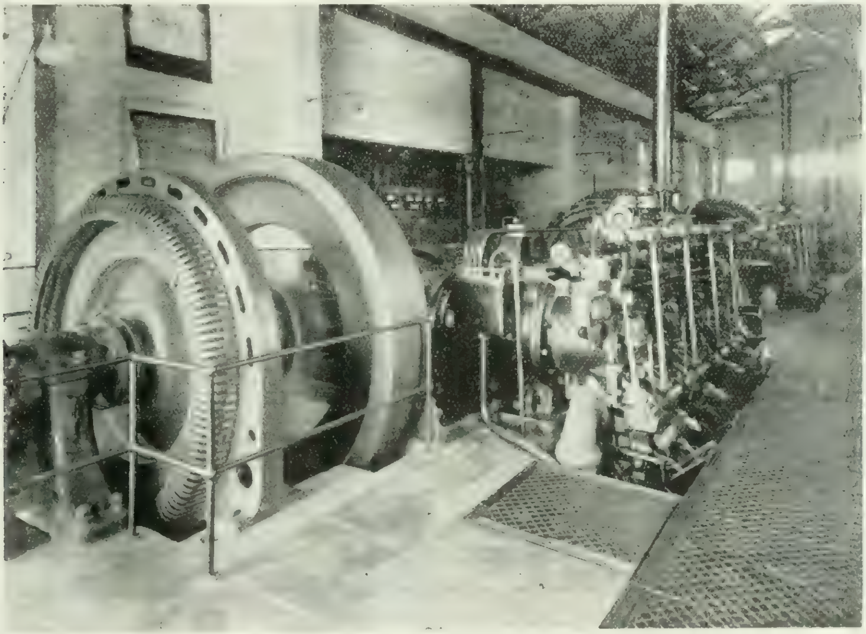
Loveday House. P.O. Box 2466. 'Phone 3553. Wires: "FAGGOT."
JOHANNESBURG.
And Box 444, Kimberley. Box 1228, Durban.

The Largest Gas Engine Power Plant in South Africa.

DETAILS OF THE LONELY MINE'S EQUIPMENT—BIG ECONOMIES EFFECTED.

Mention was recently made in these columns of the big saving effected at the Lonely Mine of the Lewis and Marks groups by the installation of gas engines operated by gas producers using the local woods, and through the good offices of Messrs. Blane & Co., Ltd., we have been enabled to collect the following details of the interesting plant—the largest of its kind in the Union or Rhodesia.

The Lonely Mine is about 60 miles from Bulawayo, the nearest siding being Bembesi Siding on the Bulawayo-Salisbury line, and it is situated about 40 to 45 miles from the mine. The roads not being too good, the heavy cost of transport makes the use of Wankie coal prohibitive.



The Gas Engines at the Lonely Mine.

The First Power Plant.

In the early days Bellis & Morcom's triple expansion engines and Babcock & Wilcox type water-tube boilers were installed, and during the first few years, when there was a pentiful supply of suitable wood close to the mine, all was well! But later on this supply of wood became depleted, and the expense of transport was increased, until the mine was faced with the demand from the transport riders of 21/- per cord of wood delivered at the mine. This expense, combined with the ever-increasing cost of stores and material and wages, made the management seriously consider some other methods of power production. Investigations were made as to the suitability of using gas engines driven from gas producers, gasifying the local woods, and inquiries were made in England, America and Australia regarding the best type to instal. They had the opportunity of choosing between vertical and horizontal engines, "up draught," "down draught" and "double draught" producers, and after carefully considering the reports that were received from various users, it was decided to instal horizontal engines and single draught producers. The point then arose, would the gas engines and plants that were running so successfully in other parts of the world give an equal result when running on the local Rhodesian woods. This point was conclusively settled by sending a large quantity of wood down to a firm in the Cape Colony, who had been running for 7 or 8 years with an engine and plant making gas from wood from the Addo Bush. A series of tests were conducted at the factory by Mr. Bulkley, Consulting Mechanical Engineer for Messrs. African and European Investment Co., and not only were the tests quite satisfactory, but it was found that the engine and plant were able to use the marulla wood which was found impossible to burn under the boilers at the mine, and as there was a large quantity of this timber left standing close to the mine, a large and cheap supply of wood was available.

The New Plant.

Eventually the engines and plants were ordered and consisted of 3 four-cylinder M. Type Premier horizontal engines, each 368 normal and 468 max. H.P. at sea level, coupled direct to 500 V. 50 cycles, 3 phase, General Electric alternators, each of 250 K.W. And a fourth three-cylinder horizontal M. Type Premier engine was coupled direct to a Ingersoll-Rand Co. compressor, the whole of the engines being driven from a battery of four Crossley patent wood gas plants. These plants are coupled up by means of a system of bus pipes, so that each engine mixed gas, which represented a mean average of the gases being given off from the individual producers. The sizes of the plants were such that three of them were sufficiently large to supply four engines, leaving the fourth plant as a standby.

From the time the first gas engine and plant started up, about July, 1921, no trouble has been experienced, and a continuity of running has been obtained that is equal to the finest steam plant in existence. After the third engine had been erected and running, 80% of the load was taken up by the gas engines, and during 24 hours run the gas engines consumed 13 cords of wood, the remaining 20% of load was carried by the steam engines, and during this time they consumed 34 cords of wood. The engines run the alternators in parallel and a special electric device which is operated from the switchboard acts direct on the governor speeding spring, allows the speed of the engines at starting to be adjusted for paralleling.

Smooth and Cheap Running.

The engines run quietly and efficiently and the first thing that attracts the visitor entering the power station, is the soft hum of the Alternators and although this musical sound is not intensive, it is quite sufficient to dampen the sound of the moving parts of the gas engines. Another point that strikes the visitor is the small amount of labour that is used on the plant. On the steam engines and boilers there was a whole army of natives fetching and carrying wood for the boilers and two to three boys at each furnace door. Now one boy can keep all the plants fed, having his fuel delivered to the top of a charging platform by means of a small truck operated from an electrical winch. Three boys during the first shift receive the wood in the usual cord wood length, i.e., 4 ft.; this is cross-cut in two, and sufficient wood is delivered on to the charging platform in one shift, to last the whole 24 hours. On the floor one boy is employed collecting the tar, removing ashes and keeping the place clean, whilst in the engine room one white man attends to the engine assisted by two natives. This is a great reduction in labour as compared with the 39 boys per shift employed on the steam engine set.

Prof. Buchanan's Tests.

After the plants had been running some time, Professor Buchanan visited the mine to take some independent tests, and the following are extracts from his report:—

Test extended over 24 hours.

Wood Used.—Mopani, knobby thorn, marulla and soft woods. Total wood fuel consumed, 41,208 lb.; total number of B.T. units generated, 11,503; average consumption of wood per B.T. unit, 3.575 lb.; average moisture in wood, 13.5 per cent.; guaranteed consumption of dry wood at full load, 2 lb. per B.H.P; average load during test, 477 K.W.; average proportion of full load, 80 per cent.; efficiency of generators at 80 per cent. per load, 89.5 per cent.; fuel used per hour, 1,703 lb.; fuel per B.H.P. per hour, 2.39 lb.; fuel per B.H.P. per hour corrected for moisture, 2.07 lb.; guaranteed consumption at 80 per cent. of full load, 2.15 lb.

Cost of Fuel.—Cords of wood, 128 cubic feet.

Average Weights.—Mopani closely packed, 3,912 lb.; mopani loosely packed, 3,600 lb.; marulla closely packed, 3,700 lb.; marulla loosely packed, 3,000 lb.; average weight, 3,300 lb.; cost per cord, 15s.; cost per unit, 0.20d.

Note by Professor Buchanan.—" The consumption (0.20d.) is lower than obtain in some large steam plants using cheap coal."

Calorific Values (Gross) of Gas obtained by Direct Combustion.—No. 1, sample 148; No. 2, sample 172, No. 3, sample 160, No. 4, sample 160; average, 161.5 B.T.U.'s per cubic foot.

Composite Analysis of above.—CO^2, 1·8 per cent.; O, 2.5; CO, 22.9; H, 15.4; CH^4, 1.0; olefines, traces; 142 B.T.U.

It will be noticed if the samples tested by the Hempel apparatus are corrected for oxygen, then the two B.T.U. values practically coincide. Since these plants and engines were installed they have been reducing the running costs £3,000 to £3,200 per month.

Savings Effected.

When the December quarterly report of the Lonely Mine was published, it was stated that the " crushing costs had been reduced from 40s. to 30s. per ton." Messrs. C. B. Kingston and Bulkley must be congratulated on having the courage to scrap a steam plant long before its useful life from a purely mechanical standpoint had expired, and undoubtedly they must be considered pioneers in this country in respect to gas engine power stations obtaining power from wood that will undoubtedly completely revolutionise the methods of power production in isolated mines. The fact that this system has proved so efficient and reliable, effecting enormous savings, should make owners, consulting engineers and managers consider seriously their present power methods. A saving such as effected at the above mine is such that if steam engines were replaced by gas engines, a saving of 10s. per ton crushed might result, which, in the case of a low-grade mine, might mean the difference between profit and loss.

WE DO THE BIGGEST MERCHANT TRADE IN SOUTH AFRICA.

IRON AND STEEL
BARS, ANGLES, CHANNELS, JOISTS, TEES,
PLATES, BOLTS AND NUTS, SHAFTING, Etc.

COPPER AND BRASS
RODS, SHEETS, TUBES, Etc.

M. BROWN, STOCK SHEETS ON REQUEST
180, MAIN ST., JOHANNESBURG.

Telephones 5770 and 3248
Tel. Add.: " MAUBROWN,"
JOHANNESBURG.

Mining in the Transvaal "Outside" Districts.

COAL AND BASE METAL PROSPECTS—QUESTION OF GOVERNMENT ASSISTANCE.

The Pretoria Inspectorate of Mines includes the chief coal and base metal mines of the Transvaal, and the following extracts from the annual report of the Inspector, Major T. G. Trevor, reviews the position of those mines during last year.

Major Trevor writes.—The general progress of mining work during the year under review has, I regret to say, been unsatisfactory, but as this is not due to any falling off in the value of the mines but owing to the world-wide depression of trade and falling prices, it need not give rise to any discouragement about the future prospects.

Coal.

With regard to the prospects of the ensuing year, it is doubtful if the trade in coal and its products can reach the figures for last year owing to the disorganisation of the coal trade caused by the industrial position on the Rand and the coal strike itself. Apart from this, the development of the mines and the opening of new mines during the period under review, would enable the increase not only to be maintained but to be trebled during the present year if a market could be found for the output. It is worth while, however, noting that the loss of our export trade has been due chiefly to the selling of Welsh coal below the cost of production, which has been done owing to the extraordinary economic position in England. When conditions become normal, South Africa will again be able to compete for the trade in the Indian Ocean. Of the ultimate value of the coal industry of this country there need, therefore, be no doubt.

Copper.

The decrease in the copper output of £161,692 is entirely due to the closing down of the Messina Copper Mine. At this mine, work on the new plant was continued to the end of the year. During January, 1922, all construction work, however, ceased, and the mine was placed practically on a caretaker basis. The position of the mine may be summarised as follows:—There are developed 543,266 tons of an average grade of 3.27 per cent., equalling 17,773 tons of copper in the mine; there are also 1,600 tons of copper contained in the tailings which can be extracted. The prospects of future developments of the mine are reasonably good. With the new plant it is estimated that at the present time it will cost something over £75 per ton to produce and market this copper. The present price of standard copper is £60. Costs are, however, going down, and if the price of copper should go up in the next few years, the mine will again become profitable. The developments on Arton Villa, the neighbouring mine to Messina, are such that, worked in conjunction with Messina, the mine may become payable, and has fair prospects of continuity, but without Messina, the size of the ore bodies would not justify the flotation of an independent mine.

Tin.

As foreshadowed in my last annual report, the great fall in the price of this metal, which occurred during 1920, has caused a decrease in value of £294,696 in the output. The position on the mine being as follows:—The Rooiberg and Leeuwpoort Tin Mines have practically ceased production from their mines but continued a small production from slimes, tailings and various sources, which is still continuing. The Groenfontein Tin Mine produced for two months in the year only, while Mutue Fides was let on tribute and Stavoren closed down. The Zaaiplaats Tin Mine came to the end of its cash resources, but has managed to keep going on a small scale by very strict economy. They have, however, recently struck some new ore and the position of the mine is by no means discouraging, though the company itself is in a very poor way.

Some rich ore, which may develop into a new mine, has been discovered at Welgelegen (Transvaal Consolidated Land and Exploration Company, Limited), on the top of the mountain above Moorddrift, but, speaking generally, there seems to be little hope for the general prosperity of the tin mines, unless the price of tin shows a very considerable increase, of which no immediate prospects are visible.

Lead.

This metal showed a decrease in value of £129. This would have been greater but for the advent on the producing list of the Transvaal Silver and Base Metals, Limited. This company, which has re-opened the old Transvaal Silver Mines at Argent, has developed and equipped the mine on a most complete scale, and though developments have not been up to the very sanguine expectations which there were at one time, they are reasonably satisfactory, and the mine should have a life of at least several years and add considerably to the value of the gross output of the district. Of the prospects of the neighbouring company, the Pretoria Silver and Lead Company, Limited, it is too early to speak.

Corundum.

The export of crude corundum from the Zoutpansberg District showed a decrease of £526, and practically ceased, but during the year, experiments were conducted by Messrs. Setterfield and Chamberlain in crushing and grading the material, which were highly successful, and a five-stamp battery with an appropriate dressing-plant is now working and producing from 1½ tons to 3 tons a day of properly crushed and graded material, which is being bagged for export. The original samples met with a very good reception on the European and American markets. The first consignments have gone forward, and I have every confidence that a permanent industry will be established, though the proprietors have had great difficulties to overcome, not the least of which was the difficulty of obtaining reliable analyses. In this matter, as in various others, I am glad to say that this Department was able to render great assistance; in fact, the industry would not have been started without our assistance and that of the officers of the Geological Survey.

Arsenic.

The production of arsenic at the Consort Mine was reduced nearly to a vanishing point during the year, and no other producers started, nor were any other arsenious deposits discovered. The Union, therefore, remains dependent upon imports for its supplies of this essential mineral.

Talc.

The talc output has decreased by £921, but the position of the mines is satisfactory. As soon as freights become cheap and normal conditions return, I should not be surprised if the output of this mineral increased largely.

Mr. E. Brayshaw, who has been absent in Europe for more than a year, has left England on his return to South Africa.

* * *

Mr. Digby V. Burnett, Consulting Engineer for Sir Abe Bailey's interests in Rhodesia, has been visiting the Rand, and returns to Salisbury to-morrow night.

REGD TRADE MARK

Complete Electrical Equipments for Every Requirement

THE B.G.E.C. Products are manufactured in the many factories of the G.E.C., England, each factory specialising in its own particular type of apparatus.

The advantage of placing their contracts with a firm which manufactures within its own organisation everything requisite for complete electrical installations must appeal to all Engineers and Promoters of large engineering schemes.

Your Enquiries Invited
in Connection with
Electrical Plant for
every service.

The British General Electric Co. Ltd.
Representing The General Electric Co., Ltd., of Eng

Capetown
83/89 Castle St
Box — 1327
Phone — 1401/2
Tel 'Induction'

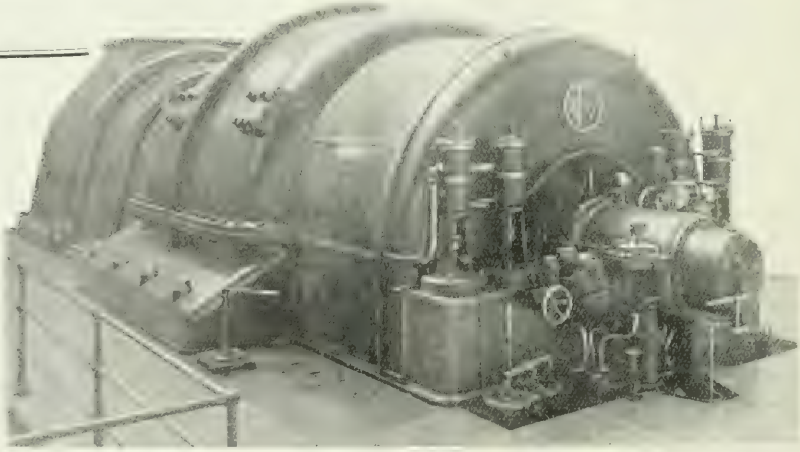
Head Office:—
Johannesburg
Corner Loveday and Anderson Streets
Box 2406 Phone 4242/3 Tel.: "Current"

Durban
56 Field Street
Box — 922
Phone — 1793
Tel.—'Ampere'

Agents at Port Elizabeth, East London, Maritzburg, Bulawayo, Delagoa Bay, Beira, Dar-es-Salam, Tanga, Zanzibar, Mombasa, Nairobi, Uganda, Etc.

Some B.G.E.C. Products.

- Steam Turbines.
- Turbo-Compressors.
- Turbo-Blowers.
- Turbo-Alternators.
- Geared A.C. & D.C. Generators.
- Generators A.C. and D.C.
- Rotary Converters.
- Motor Generators.
- Phase Advancers.
- Motors A.C. & D.C.
- Motor Control Gear.
- Switch Boards.
- Industrial Switch Gear.
- Instruments.
- Wires and Cables.
- Telephone Apparatus.
- Portable Electric Tools.
- Lifting Magnets.
- Passenger and Goods Lifts.
- Electro-Medical Apparatus.
- Magnetos.
- Lighting Fittings and Accessories.
- Osram Lamps: Vacuum and Gas filled.



18,750 K.W. (23,000 K.W. Overload) Fraser & Chalmers High Pressure Steam Turbine.

General Mining Progress.

ANNUAL REPORT'S FIGURES.

The annual meeting of the General Mining and Finance Corporation will be held on September 21, and the annual report for 1921 has now been issued. The report states that the working profit for the year ended December 31, 1921, after deducting administration expenses, etc., amounted to £65,273. From this, however, it was necessary to write off losses in respect of mining ventures and stocks and shares realised, amounting in all to £24,927, leaving a balance (being profit for the year) carried to balance sheet of £40,346. To this must be added the unappropriated profit brought forward from the previous year, making a total credit to appropriation account of £174,047.

Depreciation of Holdings.

The corporation's holdings of shares and debentures show a depreciation in the aggregate of £1,186,786 if taken at the market prices obtaining at December 31, 1921, as compared with a depreciation of £1,189,744 at the close of the previous year. The directors point out that this depreciation is largely in holdings in dormant concerns and does not represent a realised loss, but that any material improvement is largely contingent on the re-financing of certain of the companies under the corporation's control in which it holds large interests and which require additional working capital for the recommencement and continued prosecution of mining operatons.

Major Investments.

The major portion of the share and debenture investments are in the 10 mines under the management and control of the corporation. These are: Outcrop gold mines (producing): Aurora West United, Meyer and Charlton, New Goch, Roodepoort United Main Reef, Van Ryn, and West Rand Consolidated. Deep level gold mines (partially developed or waiting development): Cinderella Consolidated, New Steyn Estate, and Rand Collieries. Base metal mines: Transvaal Silver and Base Metals, Ltd. A short résumé of the operations for the past financial year of each of these companies appears in the report.

The corporation holds various mining properties, real estate, and leasehold property, etc., standing in the balance sheet at £161,234.

The erection of the desulphurising plant and the first unit of the smelting plant of Transvaal Silver and Base Metals, Ltd., was completed in October last. The concentrating plant was installed towards the end of December. From the beginning of the company's present financial year (November 1, 1921) up to the end of May, 1922, 1,219 long tons of lead-silver bullion were produced, the approximate value being £46,500. Regular production is now being carried on at the rate of approximately 400 tons of bullion per month. Operations even on this scale show a fair margin of working profit, and it is hoped that in the near future the rate of production will be augmented.

Working Costs Now Falling.

In a general concluding statement the directors point out that the revenue from the corporation's gold-producing subsidiaries was adversely affected by the lower price, as compared with 1920, which was obtained for gold, while unfortunately working costs continued on the up grade, with the inevitable result that the working profits on the whole showed a considerable decrease. During the year under review it became increasingly evident that this state of affairs could not continue, and accordingly certain reductions in white wages were made in conformity with the decrease in the cost of living. It was further decided that changes in working conditions, including the better utilisation of native labour and modification of the underground contract system, were necessary to improve efficiency. These changes were not acceptable to the labour unions, and a strike was declared in January last, which culminated in an attempted revolution in March, the end of which witnessed the complete restoration of law and order by the forces of the Union Government. Since that date working conditions have improved considerably, owing to the institution of the reforms put forward by the employers, with the result that the working costs of the gold-producing companies are steadily falling.

Ex-Enemy Shares.

In May last the directors concluded negotiations for the acquisition of the whole of the ex-enemy shares of the corporation held by the Union Custodian of Enemy Property and the Public Trustee for England and Wales. These holdings, which amount to approximately 800,000 shares, were purchased at the price of 2s. per share. The directors propose to utilise this purchase in reduction of the corporation's issued capital of 1,875,000 shares, and the difference between the nominal value of £1 per share and the purchase price of 2s. will be available in writing off depreciation of assets. In addition, the corporation has also acquired, for its own account, all ex-enemy shares of the following companies: Aurora West United G.M. Co., Ltd., Cinderella Consolidated Gold Mines, Ltd., Meyer and Charlton G.M. Co., Ltd., New Goch Gold Mines, Ltd., New Steyn Estate Gold Mines, Ltd., Rand Collieries, Ltd., Roodepoort United Main Reef G.M. Co., Ltd., Sacke Estates and Mining Co., Ltd., West Rand Consolidated Mines, Ltd., and Van Ryn Gold Mines, Estate, Ltd.

COST OF CONCRETING COMPARED WITH TIMBERING IN MINE ROADWAYS.

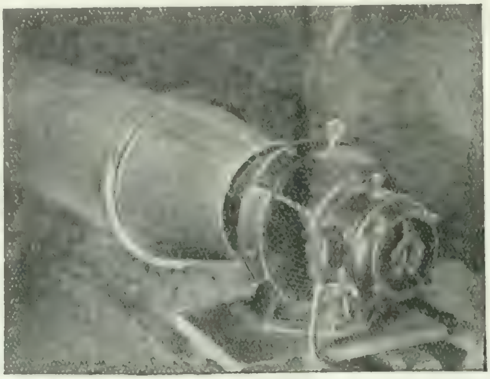
Hans Neubauer, a German mines inspection engineer, reports upon the use of his system of mine-gallery concreting in certain mines in Czecho-Slovakia, and the saving in wages and material that has been effected by using concrete instead of the older timbering method. The system is not a rigid system of construction, as is the case with ordinary stamped or reinforced-concrete or masonry work; but is flexible, with a view to preventing fissures and cracks due to creeping roofs and other causes. The segments or rings are interlinked, being separated by vertical joints. Standard concrete slabs weighing from about 70 to 80 lbs. are used, and these are made above ground and carried below. Being comparatively light to handle, work proceeds rapidly, it being possible for one man to lay from 35 to 42 cubic feet of this slab masonry in an hour. It is claimed that no special frames, scaffoldings or mouldings are required, and that traffic in the roadways can be continued practically uninterruptedly during the work of concreting.

Particulars are given of one instance where the method was applied in a long cross-cut, in which the conditions formerly had been so bad as to necessitate the timbering being renewed frequently at considerable expense, and in which repairs are said to have been practically eliminated after the completion of concreting.

The author submits figures showing the cost of concreting as compared with timbering. In one gallery, 645 yards in length, concreting work was carried out from August, 1914, to November, 1915, the cost figures being, of course, no criterion of what the same work would cost to-day. In this case the total cost for the whole gallery was £1,950, which works out at just over £3 per yard. From the amount of timber and labour previously required, the author estimates that a sum equal to £37,600 would have been spent in maintaining the same gallery in timber from 1916 to the middle of 1921, taking account, of course, of the considerable increases in wages that have taken place.

Two further cross-cuts, totalling 2,250 yards long, also treated on the Neubauer system, are said to have cost practically nothing for maintenance since they were concreted.

SPECIAL VENTILATION IN MINES



. SIEMENS .
SCHUCKERT
SCHLOTTER
BLOWER.
80% EFFICIENCY.

AIR OR ELECTRICALLY DRIVEN. ——— COMPACT AND POWERFUL A NOTEWORTHY ADVANCE IN DESIGN.—MOTOR CANNOT BE OVERLOADED WHATEVER THE DUTY DEMANDED. ——— THE IDEAL BLOWER FOR DEVELOPMENT WORK.

BRANCH OFFICE FOR SOUTH AFRICA :

C. KLEUDGEN, LTD.,
Corner of LOVEDAY and MARSHALL STREETS, JOHANNESBURG.
P.O. Box 1164. Telegrams : "KLEUDCO." Telephone Central 5435.

"HUMBLE" SAFETY
DETACHING HOOK

SOLE AGENTS:

GEO. CRADOCK
—AND CO. (S.A.), LTD.—
75-77, CULLINAN
BUILDINGS.

P.O. Box 316. Telephone 539.
Tel. Add. : "ROPES."
JOHANNESBURG.

Points About Robins Conveyor Belt—No. 5

¶ Given half a chance, Robins Patent Conveyor Belts run very straight.

¶ This is due to several reasons :

Flexibility afforded by the stepped-ply construction,

High-grade rubber covers and friction, which prevents access of moisture to the carcass with resultant uneven stretch,

Special manufacturing methods which ensure perfect alignment of the belt's axis with its edges throughout every step of production.

¶ Play safe—use Robins—the original.

Robins Conveyors (S.A.), Ltd.
(Head Office : Robins Conveying Belt Co., New York, U.S.A.)
BOX 4736, Telephone 4182, JOHANNESBURG
BOX 811, Telephone 3383, DURBAN

The South African Mining and Engineering Journal.

HEAD OFFICE: 176-180 Stock Exchange Buildings (2nd Floor), Fox Street, JOHANNESBURG, Union of South Africa.

Telephone **913.** P.O. Boxes **963** and **4573.**

Cables and Telegraphic Address: "MINING JOURNAL."

ANNUAL SUBSCRIPTION RATES: Oversea, £2; Union of South Africa and Rhodesia, £1 10s.; Local Delivery (Town only), £1 6s., payable in advance.

AGENTS FOR GREAT BRITAIN AND AMERICA: Argus South African Newspapers, Ltd., Byron House, 82-85, Fleet Street, London, E.C. 4.

Copies of this Journal are obtainable at all Branches and Agencies of the Central News Agency, Ltd., at all News Agents and Railway Bookstalls throughout South Africa, and at the London Agency as above.

CONTENTS.

PAGE.
Luipaardsvlei Estates Much Improved Position . 1789
Progress of the Iron and Steel Industry 1790
Design of the New State Areas Plant 1791
The Largest Gas Engine Power Plant in South Africa 1793
Mining in the Transvaal "Outside" Districts 1795
General Mining Progress 1797
Topics of the Week 1799
August Output: Group Returns 1803
Letters to the Editor 1804
August Costs and Profits 1805
Share Market 1807
Engineering Section:
Motor Trucks for Mine Transport—I. 1809
British Engineering Standards 1810
Rhodesian Section:
The Rhodesian Railways Report 1811
Trade and Industries Section:
The Week in the Mining Material and Engineering Trades 1813

TOPICS OF THE WEEK.

"Small Mines" in the Transvaal.

One consequence of the recent settlement of labour troubles and of wage adjustments on the Witwatersrand which rather has been overlooked is the greatly improved outlook, not only for the big mines of the Main Reef Series, and particularly the low grade mines, but also for the smaller mines of the outside districts. At the time of the strike it was pointed out in the columns of this journal that the *régime* of high costs, redundant employees and inefficiency was not only severely penalising the Rand, but that it had also virtually killed the small man industry in the outlying areas. In former years numerous gold propositions in the Barberton, Lydenburg, Klerksdorp and Zoutpansberg districts managed to treat low grade ore at a profit. But with the war and the inauguration of a period of high wages, expensive stores, and industrial Bolshevism many of these mines saw such advantages as they possessed through natural facilities for cheap working gradually slipping away from them. They struggled on for a while, but eventually the tide of economic circumstances proved too much for them. Even the high gold premium of 1920 and 1921 proved insufficient to give them profits, and several properties closed down. But now, with better conditions obtaining on the Rand, which sets the pace to the whole country, with more reasonable wages and a good prospect of cheaper stores, efforts are being made to reopen several outlying propositions. No doubt activity in the outlying gold areas will be stimulated by the Afrikander enterprise, and it has been a long recognised fact that in the Transvaal there are numerous comparatively small outlying gold ventures which, had they been situated across the Limpopo in that land of small mines, Rhodesia, would be augmenting the output of the great Rand, the glamour of which has thrown out of perspective the merits of every other gold mine in the Union. Our frontispiece this week depicts one or two scenes on the outlying goldfields, and we hope in the near future to publish an article showing what actually is being accomplished on some of the more remote and little known goldfields of the country.

Katanga and American Capital.

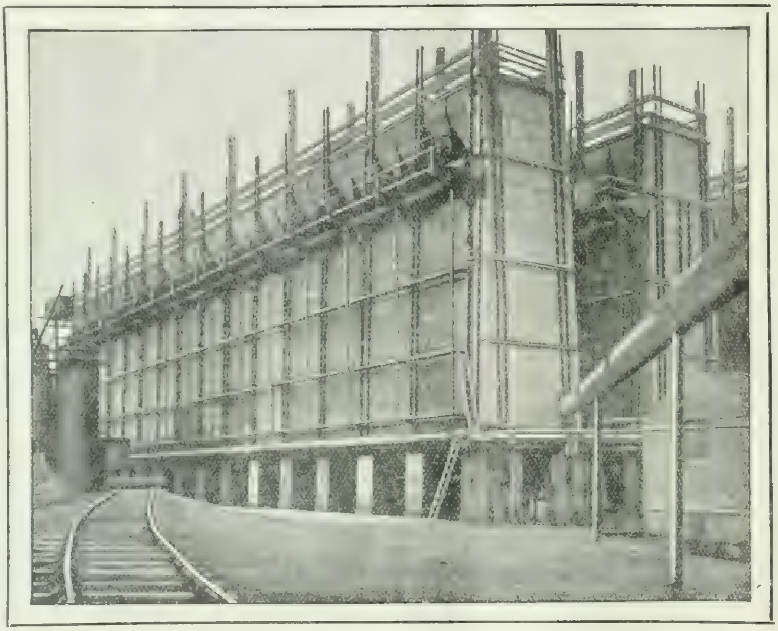
The Union Miniere is the only big copper proposition in the world to-day which is paying expenses, and it is a remarkably interesting fact that the company actually has been selling copper to the States during recent months. It has for long been believed that the big American producers will sooner or later have to take very serious notice of the immense copper fields of the Congo, and it is not impossible that a chance of becoming interested in this proposition has presented itself through the Smuts intervention in regard to completion of the Lobito Bay line.

Under the heading of "Congo Copper Crisis," "The Times" of August 16, after referring to the breakdown of negotiations recently intiated for the purpose of obtaining through the Trade Facilities Advisory Committee a Government guarantee for capital to enable the Benguella Railway to be completed, states: "It is understood that steps are now being taken to obtain the necessary funds in the United States, which would give America control of the greatest copper deposit in the world, both as regards ore in sight and cheapness of operating costs. At present Great Britain, through the Tanganyika Company, holds a 38 per cent. interest in the Union Miniere du Haut Katanga, which owns the copper mines." The assumption that by this means the Americans may obtain "control" of Katanga is hardly in keeping with the statement that "Great Britain through the Tanganyika Company holds a 38 per cent. interest in the Union Miniere." But if American money is forthcoming for the completion of the Lobito line to the Angola-Congo border, and the Belgians under existing agreements have then to link up the Benguella line with the copper industry, it may well alter the complexion of affairs not only in Katanga but throughout the whole world of copper.

The Diamond Outlook.

Advices from an authoritative quarter in New York indicate that American opinion regards the period of liquidation in the diamond industry as being definitely at an end. Instead of the decline predicted by certain dealers, a steady advance has taken place, which may be roughly estimated to amount for the first half of this year to about 10 per cent. Proof of the resumed purchasing power of the United States is to be found in the reopening of the shops of many American cutting establishments. The Diamond Syndicate has made a promising beginning with a succession of sales at enhanced prices. It follows, as the United States remains the best customer for cut stones, that this recovery is a favourable augury for the entire industry. According to the American authority *Mineral Industry*, the pre-war consumption of diamonds in the United States amounted to three-fourths of the world's total production, and in the opinion of that publication consumption is likely to continue at least to the same extent. At the present time, America is not absorbing anything approaching its pre-war percentage, but the improvement in the economic position has at least helped to reduce materially the quantity of privately-owned diamonds which were offering on the market. The impression prevails widely that the United States alone can afford

OIL SHALE DISTILLATION
MINERAL OIL
REFINING AND PARAFFIN WAX
PLANT OF ALL DESCRIPTIONS



OIL SHALE RETORTS.

A. F. CRAIG & Co., Ltd.,
PAISLEY.

40 years' experience in designing and manufacturing
MINERAL OIL PLANT.

London Office: 12, Old Jewry Chambers, E.C.

South African Representative: Dr. NORMAN L. GEBHARD,
No. 23, Leuchars Buildings, Smith Street, DURBAN.

to purchase luxuries, because its [illegible] and political foundations have not had to suffer such shocks as those which are responsible for the economic crisis in the greater part of the Old World. It is, however, well to bear in mind that diamonds are not merely luxuries, but constitute in many European countries the easiest and possibly the only safe method of concealing and carrying wealth. Fears of levies on capital and the startling depreciation of the currencies of Germany and Austria have recently been responsible for the reabsorption of some of their own previous "dumpings" and of a substantial proportion of the diamond "dumpings" of Russia. These purchases have undoubtedly contributed to the stabilisation of the market for the stones, while the gradual revival of business in the United States has naturally further assisted the rise in prices. A favourable impression was created by the practical disappearance of competition, thanks to the taking over of the German South-West African diamond areas by their former British competitors. Much more recently the Belgian Congo diamond mines also came into the London Diamond Syndicate, which is now responsible for the marketing of fully 95 per cent. of the world's total output. A very interesting sidelight on the United States' diamond position is thrown by an examination of import statistics for 1921 and the current year. Last year the United States imported uncut diamonds to the value of $2,257,299 and cut diamonds to the value of $26,338,455. For the first four months of the current year the value of uncut stones imported amounted to $1,326,484 and of cut stones to $10,626,645. An Antwerp paper asserts that the transactions in the diamond trade are acquiring greater and greater importance, and indicate the re-establishment of confidence. "There is a very strong demand for both rough and cut stones. American purchasers continue to arrive."

Railway Rates and Inland Industries.

Reduced rates on a number of commodities are announced by the S.A.R., and the latest Bulletin of the General Manager contains several encouraging features. It is plain that the Administration is making a big effort to reduce expenditure and make up the accumulated deficit. From the viewpoint of the inland industrialist and consumer, however, railway rates are still a long way off the figures they should be if justice is to be done and the railways run on the "business principles" laid down in the Act of Union. We have no desire to detract from the heroic efforts now being made by the Administration to mend matters, but its hand must be strengthened to carry out the necessary programme of economy and reform. The Minister of Railways, we understand, will open the forthcoming annual Congress of Chambers of Commerce at Bloemfontein, and with Mr. W. A. Martin in the chair we can count on some plain speaking in regard to the case for the inland community *vis a vis* the S.A.R. Mr. Martin, it will be remembered, recently signalised his assumption of the position of president of the Johannesburg Chamber of Commerce by setting out in great detail and with force and logic the case for reduced railway rates and general reform of railway finance. In the course of his long and closely-reasoned statement, he analysed the railway deficit, and having dealt with the various factors in railway policy to which the deficit was attributable, considered whether the principles of railway finance were conformable with the terms of Sections 127 to 132 of the South Africa Act, and whether the railways had been used for the common benefit of the whole community of South Africa. Could it be said that the railways had been administered with a view to establishing and encouraging industries in the inland colonies, when a large proportion of the mining industry had been crushed out of existence, partly owing to the imposition of heavy tariffs in excess of those in operation under less favourable economic railway conditions elsewhere in the Union, with the object of extorting from the mines the last penny of profit on the ground that 'they can afford it.'' They had, continued Mr. Martin, a right to expect that members of the House of Assembly representing inland towns and districts, irrespective of party, especially those representing the Witwatersrand, should demand an inquiry as to whether or not the conditions of Articles 127-132 of the South Africa Act were being complied with by the Railway Administration. If these clauses were the Magna Charta of the inland portions of the Union, they had a right to insist on their strict observance. Unless satisfied that such was the case, they had their remedy. Neither the Government nor the Railway Administration was a law unto itself. They were entitled to bring them before the Courts for a decision as to whether or not they were carrying out the obligations laid upon them under the Articles, and if the Court decided against them, an order could be made compelling them to do so. Under such circumstances, other points having far-reaching consequences might be raised. In summing up a lengthy survey, Mr. Martin said they were justified in demanding: (1) That the railway deficit be transferred to the Consolidated Revenue Fund; (2) that the railways be relieved of payment of interest on capital, "being capital contributed out of railway and harbour revenue"; (3) that preferential rates be abolished; (4) that the loss, if any, on export oversea competitive and distribution rates be charged against the Consolidated Revenue Fund; (5) that the extra cost of white labour (relief) be debited to the Consolidated Revenue Fund; (6) that the services rendered by the railways to other Government Departments be charged for; (7) that discrimination between certain classes of traffic in favour of Natal and the Cape Province be abolished; (8) that no branch or other lines be built unless any losses incurred in their working be recovered by a levy of a special assessment on the land developed or be borne by the Consolidated Revenue Fund; (9) that any further losses on the lines of the South-West Protectorate be charged to the Consolidated Revenue Fund; (10) that the Witbank-Rand coal rates and local Rand coal rates be reduced.

Professor Lawn's Views.

Earlier in the year Professor Lawn, in his annual report on the Government Areas, took occasion to set out in detail the case for the mines. He showed that there had been nothing but a steady increase in railway rates since the Great War began. These increases affected the mines very severely, and it would appear that some relief in this direction was overdue. For instance, taking the item of coal—the mines paid a pit-head price for coal which was practically the same as that paid in 1914, but there had been considerable increase in railway rates. The amount paid for coal by the mines of the Witwatersrand in 1920 was given in the Government Mining Engineer's Report as £1,011,463, and it was estimated that the railage represented in this figure amounted to £603,000, whereas if the same rates had been prevailing as in 1914, the amount paid would have been £474,000. It could not be said that the sum of £474,000 would not have been fair remuneration for the services performed by the railway, as it was well known that the railway line from Witbank to the Rand was a very profitable one, so that the increase of £129,000 was an indirect tax imposed upon the mines. Professor Lawn added: "Seeing that the coal is purchased at the collieries at bedrock price, it is quite clear that in such an item as this the only hope of any reduction is in connection with railway rates. In addition, it cost the mines of the Witwatersrand approximately £50,000 more for power than it would have cost them in 1914 on account of the increased railage on coal. Another item which may be mentioned is mining poles; these are all grown in the country, and the railway gets more out of the price paid by the mines than the grower does. Taking the figures of 1920, the value of mining poles used on the Rand amounted to £526,052, and of this sum it is estimated that £300,000 represents the railage, which is an increase of £90,000 on the railage which would have been charged at the rates of 1914. In the case of explosives, it is estimated that the increase in 1920 railway rates over the rates ruling in 1914 meant £70,000 to the mines. So it will be seen that while we may look for some reduction in the price of stores, the Government ought also to meet the mines by giving some relief in railway rates." These points show that Mr. Martin is fighting the battles of the mining as well as of the other industries of [illegible] interior.

Notes & News.

Mine Workers and Rock Breakers.

The S.A. Mine Workers' Union are putting forward proposals with a view of incorporating the newly-formed Rock Breakers Association into the larger and older organisation. The S.A.M.W.U. propose a conference and the submission of a draft constitution by each side, with a sub-executive for contractors. The matter will probably be considered [illegible] the Rock Breakers [illegible]

* * *

The Vaal River Barrage.

Mr. W. Ingham, the Chief Engineer to the Rand Water Board, read a valuable paper on Wednesday evening descriptive of the great Vaal River barrage. No one, of course, is better qualified than Mr. Ingham to deal with the great work on the Vaal for which he is responsible, and though the facts and figures given by him are already known, his method of presenting them and the illustrations he showed were of great interest to the audience. The scheme will be finally completed in April of next year, when the Rand will be put out of any danger of a future shortage of water for its industries.

* * *

New Alluvial Diamond Prospect.

Some wonderful returns have been made to the Mines Department of diamonds discovered on the farm Kaalplaats No. 106. This farm is on the Vaal River, near the barrage, and not far from Lindequesdrift. The discoverer returned finds for the month of August amounting to 788 carats, valued at £6,053. Another return, covering a period of ten days, showed 530½ carats of a value of £3,469. The farm was proclaimed as a public diggings yesterday.

* * *

Rustenburg Gold Discovery.

Mr. C. M. Jack, the Mining Commissioner for the area in which the farms fall, heard applications for discoverers' rights at Pretoria on Tuesday. Mr. C. S. H. Pretorius applied for discoverer's rights on the Government Farm Kameelboom No. 857. He stated that a reef was exposed in four cuttings, averaging in width from 36 inches to 51 inches and assaying 21.10 dwts. Mr. P. E. Maree asked for similar rights on the farm Batavia No. 858, also a Government farm, on which two reefs have been opened up about 150 yards apart assaying 66.30 dwts. Application was also made by Mr. R. G. Rorke, in respects of discoverer's rights on Leeuwbosch No. 958 (another Government farm), the applicant submitting a report of the presence of gelena. All the farms mentioned are situated in the Rustenburg District. The result of the hearing has not yet been announced. It might be mentioned that it is not clear if the assays mentioned are single ones or if they represent the average of a series. It is, however, probable that they are individual assays.

* * *

South African Mining Outlook.

"To see ourselves as others see us" is permitted by the following extract from the speech of Mr. F. H. Hamilton at the annual meeting of the H.E. Proprietary, Ltd.:—"The point," he said, "has not been reached at which we can say definitely when it will be possible to embark confidently upon the opening up of new areas, which involves large capital expenditure, but the progress towards increased efficiency and lower costs has of late been marked, and if it is maintained it will soon be generally recognised that the outlook is a very favourable one. In the meantime our own attitude is necessarily a waiting one. In Klippoortje we have, as you know, an asset which should ultimately prove of great value. The conclusion that this area contains the Van Ryn reef, the most important gold producer in the world to-day, at considerable depth, is now generally acknowledged, and I observe from the South African papers that the South African Minister of Mines, in a reply to a deputation, officially stated that the geological evidence now clearly indicates its existence. The question of when it will be possible to turn this important asset to account is dependent upon general conditions. I stated last year that I did not consider the time was so remote as was generally believed, and to-day I reiterate that view with more confidence than was possible twelve months ago. On the Murchison Range most of our claims have been abandoned, but we preserve certain strategic points which would become important if and when the district were to become active. We have maintained intact our interests in the Palabora copper field. We are also interested as shareholders in several of the principal South African mining companies, and I am glad to say that these interests, practically without exception, show an important appreciation upon the figures at which they stood last year. You will gather that, although we feel it necessary to speak with caution, we consider that the prospects of South African mining are emphatically brighter than they have been for a long time past."

* * *

More ex-Enemy Shares for Sale.

The Custodian of Enemy Property has for disposal shares in the undermentioned companies. The numbers are approximately as set out. Offers will be considered for all the shares in any one company, or for the total of the holdings offered. The highest or any offer will not necessarily be accepted. Terms will be cash, or payments may be spread over a year in four equal quarterly instalments, unpaid balances bearing interest at 5 per cent., and to be supported by an approved bank guarantee. Scrip will be delivered to the purchaser in Pretoria. Offers should be addressed to the Custodian of Enemy Property, P.O. Box 145, Pretoria.

LIST OF SHARES FOR DISPOSAL.

Bushveld Tin Mines, Limited	1,125
Central S.A. Lands and Mines, Limited	2,000
Coronation Collieries, Limited	100
Coronation Syndicate, Limited	25,216
Clydesdale Transvaal Collieries, Limited	100
Elandslaagte Colliers, Limited	4,300
Franco-Colonial Company, Limited	125
Geygerle, Limited	460
Harmony Proprietary Company, Limited	31,040
Independent Estate and Mining Co., Ltd.	2
Louis Moore Proprietary Mines, Limited	10,230
Lydenburg Gold Farms Company, Limited	1,000
Lydenburg Land and Exploration Co., Limited	1,750
Moodies G.M. and Exploration Co., Ltd.	27,605
Natal Navigation Collieries and Estate Co., Ltd.	1,161
Natal Steam Coal Company, Limited	50
New Geduld Deep, Limited	4,400
New Pullen Minerals Concession, Limited	935
Potchefstroom Exploration G.M. & Estate Co., Ltd.	63,585
Rand Nucleus Gold Mining Co., Limited	9,498
Rand Rietfontein Estates, Ltd., fully paid £1	21,686
Do. do. Further shares, 5s. only paid	21,117
Rogerston Collieries, Limited	100
S.A. Land and Exploration Company, Limited	2,448
Station Colliery Company, Limited	9
Vlakfontein Gold Mines, Limited	2,918
Withok Proprietary Company, Limited	5,578
Consolidated Diamond Mines of S.W.A., Limited	285
Kaalfontein Diamond Mines, Limited	2,200
New Vaal River Diamond and Estate Co., Ltd.	3,480
Pniels, Limited	85
S.A. Diamond Corporation, Limited	50
Smaldeel Diamond and Estate Syndicate, Ltd.	240
Imperial Cold Storage and Supply Co., Ltd.	22
Port Elizabeth Zwartkoppies Estate Co., Ltd.	179
Premier Whaling Company, Ltd.	1,500

August Output: Group Returns.

PROFITS INCREASED AND COSTS REDUCED.

CENTRAL MINING/RAND MINES GROUP.

The following are the results of operations at the mines of the Central Mining Rand Mines group for the month of August, 1922:—

Company.	Tons Crushed	Yield in Fine Gold oz.	Estimated Value	Estimated Profit.	Working Cost per ton
City Deep ...	89,000	38,106	£171,955	£63,701	21/ 3
Con. Main Reef	53,000	19,193	86,607	18,431	25/ 8
Crown Mines .	226,600	68,178	307,653	84,865	19/ 7
Dur. Rood. Dp.	31,800	10,871	49,054	8,058	25/ 9
E.R.P.M.	125,000	31,580	142,503	11,553	20/ 11
Ferreira Deep	34,000	9,857	44,479	8,007	21/ 5
Geldenhuis Dp.	51,650	13,788	62,220	3,977	21/ 3
Knight Central	32,500	6,472	29,081	1,681	16/ 10
Modder B. ...	62,000	33,137	149,531	82,099	21/ 9
Modder East..	27,000	11,747	52,507	15,159	27/ 8
New Modder ..	112,000	52,671	237,677	140,603	17/ 4
Nourse Mines.	48,000	15,026	67,803	9,171	24/ 5
Robinson	18,300	6,049	27,295	11,000	17/ 9
Rose Deep ...	53,700	12,745	57,513	9,043	18/ 0
Wolhuter	32,100	7,989	36,048	2,903	20/ 7
Village Deep .	57,600	18,048	81,444	16,835	22/ 5
Tls. & averages	1,057,250	355,457	1,603,370	487,086	21/ 1

July Profits.—City Deep, £66,712; Con. Main Reef, £23,781; Crown Mines, £67,690; Durban Roodepoort Deep, £7,398; E.R.P.M., £7,937; Ferreira Deep, £5,397; Geldenhuis Deep, £3,786; Knight Central, £1,246; Modder B., £86,945; Modder East, £9,049; New Modder, £127,933; Nourse Mines, £8,824; Robinson, £9,693; Rose Deep, £8,488; Wolhuter, £3,665; Village Deep, £15,002.

Modder East's Position.

Modder East shares have firmed up considerably during the past few days, and the following official statement has just been issued: "Since 1st September development work has been discontinued in the medium grade areas served by Nos. 2 and 3 shafts and development and stoping operations are now confined to No. 1 shaft section. The object of this policy which will result in increased profits being earned is twofold—firstly, to rid the company of its debenture debt as soon as possible, and secondly, to restrict development to the area of greatest promise, in the hope of proving an extension of the rich zone in that locality. Should further substantial areas of high grade ore be disclosed and the present debt wiped out, the company's circumstances would justify an appeal for funds necessary to erect the company's own plant of 50,000 tons monthly capacity, for which the large tonnage standing developed in Nos. 2 and 3 shafts sections would be then available for treatment."

WITWATERSRAND DEEP.

The estimate of results for the month of August, 1922, is as under:—Tons milled, 37,200; gold recovered, 12,738·843 ozs.; average of stamps running, 180; stamps running time, 22·312 days; tube mills, 5. The working expenditure, including head office charges, for the month is £43,417, or 23s. 4d. per ton. The estimated working revenue, based on an estimate of £4 12s. per fine oz. (less 1s. 9d. realisation charges) is £57,484, or 30s. 11d. per ton. The net estimated working profit is £14,067, or 7s. 7d. per ton, from which is to be deducted the capital expenditure for the month of £316, leaving a surplus of £13,751.

CONSOLIDATED GOLD FIELDS.

The following are particulars in regard to the outputs of the producing mines of the Consolidated Gold Fields group for the month of August

Company	Stamps Running	Tube Mills Running	Tons Crushed	Yield in Fine oz.	[illegible]
Simmer and Jack	320	7	53,700	11,659	£9,546
Robinson Deep	170	10	70,500	22,955	36,142
Sub Nigel	30	2	11,000	5,826	5,296
Totals	520	19	135,200	40,440	£40,892

Gold in Reserve.—Robinson Deep, 4,968 oz.; Sub Nigel, 1,750 oz.; total, 6,718 oz.

The revenue derived from gold for the month of August is calculated at the rate of £4 12s. per fine oz., less estimated gold realisation and exchange charges of 1s 6d., or a net figure of £4 10s. 6d. per fine oz.

BARNATO GROUP.

The following are the results of operations at the Barnato group of mines for the month of July:—

Mine.	Tons Crushed	Revenue from Gold £	Total Working Costs. £
Consolidated Langlaagte ...	45,200	56,927	45,780
Government G.M. Areas ...	150,000	292,744	130,962
Langlaagte Estate	51,300	73,928	53,511
New Primrose	20,200	20,732	18,771
New Unified	11,900	11,361	10,262
Randfontein Central	157,000	209,831	155,523
Van Ryn Deep	57,200	130,126	58,693
Witwatersrand ...	48,000	55,925	42,325
Totals and averages ...	£540,800	£851,577	£515,827
July totals	£496,450	£798,381	£499,337

Mine.	Working Costs per Ton Milled. Shillings.	Gross Profit including Sundry Revenue £
Consolidated Langlaagte ..	20·257	11,366
Government G.M. Areas ...	17·461	162,542
Langlaagte Estate ..	20·862	20,706
New Primrose	18·586	2,114
New Unified ..	17·246	1,159
Randfontein Central ..	19·812	55,684
Van Ryn Deep	20·522	72,001
Witwatersrand ...	17·635	15,074
Totals and averages .	19·076	£340,646
July totals	20·116	£303,040

July Profits.—Consolidated Langlaagte, £10,687; Government G.M. Areas, £153,200; Langlaagte Estate, £14,459; New Primrose, £1,649; New Unified, £2,066; Van Ryn Deep, £63,000; Witwatersrand, £12,254.

The above results are arrived at by calculating the gold at £4 12s. per fine oz.

GLYNN'S LYDENBURG.

The following are the particulars of the output for August, 1922:—Tons crushed, 3,862; yielding 1,655 fine oz. Estimated value of month's output, £7,440. Estimated profit for month, £959. The above figures are exclusive of expenditure for the month upon shaft sinking, special development and capital expenditure amounting to £369. The gold output for the month is valued at £4 10s. per fine ounce net, after allowing for exchange and realisation charges.

GENERAL MINING AND FINANCE CORPORATION.

The following are the results of operations at the mines of the General Mining and Finance group of companies for the month of August:—

Company.	Tons Crushed.	Total Cost.	Cost per ton.	Total Revenue.	Profit.
Aurora West ...	11,000	£11,877	21·59	£13,702	£1,825
Meyer & Charlton	15,200	16,560	21·79	39,681	23,121
New Goch	17,500	16,409	18·75	17,610	1,201
Van Ryn Estate	34,900	36,380	20·85	45,600	9,220
West Rand Cons.	34,300	40,479	23·60	45,083	4,604
	112,900	£121,705	21·56	£161,676	£39,971

In computing the revenue, gold has been taken at a value of 92s. per fine ounce, less estimated realisation charges.

CONSOLIDATED MINES SELECTION GROUP.

The following are the results of operations for the month of August, 1922:—

	No. of Stamps Working	Tons milled	Working Costs per ton milled		Value of Gold Declared	Yield per ton	
			s.	d.	£	s.	d.
Brakpan	130	64,000	22	2.8	£109,428	34	2.3
Springs	80	48,000	22	5.9	90,507	37	8.5
Totals & averages	210	112,000	22	4.1	£199,935	35	8.4

	Working Profit based on standard value of Gold			Estimated Premium taking gold at £4 12·0 per fine oz. less Exchange on Remittances	Total Estimated Profit
	Total	per ton			
	£	s.	d.	£	£
Brakpan	£38,275	11	11.5	£7,795	£46,070
Springs	36,520	15	2.6	6,080	42,600
Totals & averages...	£74,795	13	4.3	£13,875	£88,670

UNION CORPORATION GROUP.

The following are particulars of the operations on the producing mines of the Union Corporation group for the month of August, 1922:—

Company.	Stamps.	Tons Crushed.	Fine Ozs.	Revenue (Including Sundry Rev) Total	Per ton. s. d.
Geduld Proprietary .	100	46,800	16,480	£76,747	32/9
Modder Deep	70	44,800	24,071	110,823	49/6
Totals and averages	170	91,600	40,551	£187,570	40/11

Company.	COSTS. Total.	COSTS. per ton	PROFIT. (including Sundry Rev). Total.	PROFIT. (including Sundry Rev). per ton.
Geduld Proprietary	£45,459	19/5	£31,288	13/4
Modder Deep	40,857	18/3	69,966	31/3
Totals and averages ...	£86,316	18/10	£101,254	22/1

The above results are arrived at by valuing gold at 92s. per fine ounce.

SWAZILAND TIN.

The following are the results of the operations of the Swaziland Tin, Limited, for the month of August, 1922:—Concentrate recovered, 13 tons; estimated net loss for the month (including credit adjustments on previous shipments), taking tin at £155 per ton, £184.

Letters to the Editor.

To the Editor, *S.A. Mining and Engineering Journal.*

Sir,—When speaking of the Geological Survey of this country I do not hesitate to say that it is most misleading and untrustworthy, as it is palpabably wrong in all the most important details—especially those connected with the economic side of the proposition.

The public pays dearly for this branch of Government service, and it should insist upon having "the truth, the whole truth, and nothing but the truth" for its money. Their inexactitudes perpetuated from its conception tire one! As, for instance, the insertion of the Black Reef series, of the Black Reef age, in a concoction of its own styled the "Transvaal System," depicted at the head of the Murchison Range in the Geological map pertaining to Mr. H. R. Adam's interesting paper on the treatment of its antimonial ores, published in your last issue.

"Transvaal System"! "Why, there ain't no such thing!" What overlooks the Murchison schists, etc., are the Lydenburg dolomites and conglomerates of the Lydenburg age, which comes next in order to our Witwatersrand age. Then the Black Reef age (with its dolomites), and lastly, Nature's icing to its auriferous cake, our carboniferous, which is incomparable with any other in the world—except, perhaps, down South Pole way some day when the earth gets another jolt.

Geology, like other sciences, must keep pace with the times, and where palpable mistakes have occurred they should be altered, and not stuck to to save the faces of those who were once looked upon as "tin-gods" at the job.—

Yours, etc.,

SCOTT ALEXANDER,

Rand Stratigraphist.

INVESTORS' DIARY.

Forthcoming Company Meetings.

(a) Annual general meeting; (s) special or extraordinary general meeting.

Meetings will be held in Johannesburg unless otherwise stated.

Sept. 20.—Swaziland Tin, Ltd. (a), 12 noon.

Sept. 21.—Transvaal Gold Mining Estates (a).

Sept. 21.—General Mining and Finance Corporation, Ltd., (a), 11 a.m.

Sept. 29.—Simmer and Jack Prop. Mines (a), 11.30 a.m.

Nov. 7.—New Modderfontein (a), 10.30 a.m.

Nov. 7.—Nourse Mines (a), 11.30 a.m.

Nov. 7.—Consolidated Main Reef (a), 12 noon.

Nov. 7.—Modderfontein East (a), 2.30 p.m.

Nov. 17.—Sub Nigel (a), 11.30 a.m.

Dec. 14.—Glynn's Lydenburg, Ltd. (a), 3.30 p.m.

TRANSVAAL GOLD MINING ESTATES.

The following are the particulars of the output for the month of August, 1922:—Central Mines: Tons crushed, 12,400; yielding 3.592 fine oz. Elandsdrift Mine: Tons crushed, 1,670; yielding 1,208 fine oz. Vaalhoek Mine: Tons crushed, 2,100; yielding 754 fine oz. Estimated value of month's output, £24,965. Estimated profit for month, £2,353. The gold output for the month is valued at £4 10s. per fine ounce net, after allowing for exchange and realisation charges.

August Costs and Profits.

COMPARISON WITH JULY—COSTS DOWN AND PROFITS INCREASED.

August profits on the gold mines of the Rand were in most cases considerably better than those for July, due mainly to reduction in working costs. The following table shows the changes in the profits and costs of the mines for the month as compared with the previous month:—

Company.	Profits			Costs per ton			Remarks.
	Aug., 1922.	Increase.	Dec.	Aug., 1922.	Dec.	Increase.	
Aurora Wests	£1,826	£114	—	21 7	2 5	—	Higher tonnage; lower grade.
Brakpans	46,070	789	—	22 3	0 6	—	
*City Deeps	63,701	—	£3,011	24 4	—	0 2	Very slightly lower grade.
Consolidated Langlaagte ...	11,366	679	—	20 3	0 7		
*Consolidated Main Reef ...	18,431	—	5,350	25 9	0 6	—	July profits were due to abnormal grade.
*Crown Mines	84,865	17,175	—	19 8	0 5		Higher tonnage, slightly better grade.
*Durban Deep	8,058	660	—	25 11	0 7	—	
*E.R.P.M.	11,553	3,616	—	21 0	0 10	—	Higher tonnage.
*Ferreira Deep	8,007	2,610	—	21 7	0 5		
Geduld Prop.	31,288	1,170	—	19 5	0 4	—	
*Geldenhuis Deep	3,977	191		21 4	—	0 3	
Government Areas	162,542	8,643	—	17 6	0 11		Higher tonnage.
Glynn's Lydenburg	959	—	384	35 11	—	—	
*Knights Centrals	1,681	435		16 11	0 6	—	
Langlaagte Estates	20,706	6,247	—	20 10	0 2	—	Better grade.
Luipaards Vlei	2,536	2,125	—	17 9	2 0	—	Slightly higher tonnage.
Meyer and Charlton	23,121	873	—	21 9	0 1	—	
*Modder B.	82,099	—	4,846	21 9	0 6	—	Slightly lower grade.
Modder Deeps	69,966	3,709	—	18 3	0 6	—	
*Modder Easts	15,159	6,110	—	27 8	2 0	—	Higher grade from No. 1 Section.
New Goch	1,201	198	—	18 9	0 5	—	
New Kleins	5,371	—	604	20 4	0 6	—	Lower grade.
*New Modders	140,603	12,670	—	17 4	0 6	—	Higher tonnage and slightly better grade.
New Primrose	2,114	465	—	18 7	0 3	—	
New Unified	1,159	—	967	17 3	0 10	—	Lower grade.
*Nourse Mines	9,171	347	—	24 6	—	0 3	
Randfontein Central	55,684	10,659	—	19 10	2 3	—	Higher tonnage.
*Robinson Gold	11,000	1,308	—	18 0	0 9	—	
Robinson Deep	36,142	6,058	—	19 3	—	0 1	Higher tonnage & higher grade.
*Rose Deep	9,043	555	—	18 1	1 0		Higher tonnage & lower grade.
Simmer and Jack ... *Loss*	546	1,583		19 11	1 2	—	
Springs Mines	42,600	7,529	—	22 6	2 5	—	
Sub Nigel	5,826	406	—	38 5	4 0	—	
*T.G.M.E.	2,353	2,108	—				
Van Ryn Estate	9,220	151	—	20 10	—	—	
Van Ryn Deep	72,000	9,000	—	20 6	0 9		Higher tonnage.
*Village Deeps	16,835	1,834	—	22 6	1 3	—	Higher tonnage.
West Rand Consolidated...	4,604	1,396		23 8	—	0 2	
Witwatersrand (Knights) ...	15,074	2,819	—	17 8	0 8		Higher tonnage.
*Wolhuters	2,903	—	762	20 8	—	1 6	
Wit. Deep	14,067	—	199	23 4	—	2 5	Slight accident to shaft, normal conditions now prevailing.

The increased profits are due to decreased working costs, as shown, whilst certain companies' profits have been further affected, as indicated in remarks column.

* Gold calculated at £4 10s. 3d. per oz. Other companies calculated at £4 12s. per oz. No difference in gold basis per oz., as compared with July.

LIQUID-OXYGEN EXPLOSIVES.

Efforts have been made by George S. Rice, chief mining engineer of the U.S. Bureau of Mines, to have liquid oxygen explosives tried out practically, but oxygen-liquefying plants are not made in the United States, which limits the use of these explosives in America. In Germany oxygen-liquefying plants are manufactured in various sizes in complete units of apparatus and containers. Since the war the only extensive development outside of Germany has been in the Lorraine iron mines, where the Germans installed apparatus, and additional apparatus has been put in by the French. One company in Lorraine is mining its entire annual output of 1,500,000 tons of iron ore by the use of these explosives. This company has developed a cartridge of its own on which it has received patents, and has applied for others. It is claimed that the cartridge is an improvement on the German cartridge. The Germans use, for brisant effects, soot; and for slow heaving effects, wood pulp. Either fuse or electric detonators can be used for igniting the charge. The Germans have now developed a method of placing the electric detonator in the bottom of the hole in a special container and have been able to fire large rounds, it is claimed as high as 28 shots at a time.

The Jo'burg No. 3 Cradle Hammer Drill

WE have proved this machine to be the fastest drilling, and the lowest on cost of maintenance, of any machine of a similar size, type and price on the Reef. Let us give you a demonstration so that it may show you what we know it can do.

The Machine that Sells Itself

The DRILL that stays underground.

CLIMAX DRILLS

THE CLIMAX ROCK DRILL & ENGINEERING WORKS L^TD
4 Broad Street Place. London. E.C.2. & Carn Brea, Cornwall.

(INCORPORATED IN GREAT BRITAIN).

Local Address : **49, STELLA BUILDINGS,**
Corner Rissik and New Streets, JOHANNESBURG.

P.O. Box 4256. Telegrams : "Thumbscrew." Telephone 2794.

The Week in the Sharemarket.

A MOMENTARY HESITATION—GOOD UNDERTONE—DIAMOND OUTLOOK.

The malady of indigestion continues with perhaps slight signs of improvement in the patient's condition. The arrival of scrip from London has to some extent eased the position of the professional London dealer, which should enable Home buying to be again financed. Meantime, local speculators, who have over-fed themselves, have been forced to sell, at the same time bringing into the market some of the fortunate ones who are afraid of their profit disappearing entirely. There are a large number who show confidence in the industry and its very excellent position by holding their shares in anticipation of enhanced values due to the merit of the concerns in which they are interested. Although it is early days to prognosticate regarding profits and costs for the current month, we are inclined to think that these holders of shares will not be disappointed. We should not be surprised again to see some pleasing results both regarding profits and costs in the September declarations, as compared with August returns, in spite of the shorter month. We have reason to believe that efficiency in both white and coloured labour is still on the increase. Doubtless the Turko-Grecian position has caused some uneasiness, but judging from London quotations the fears in this connection are evidently not deep-seated. The diamond market during the week has been disappointing, but we are inclined to think with more general activity this section will again feel the swell.

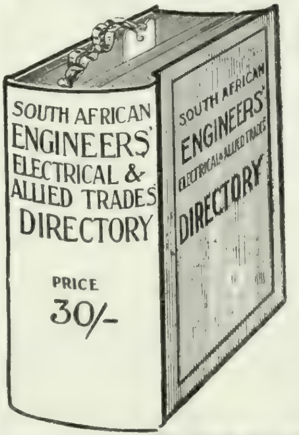
	Fri. 8th.	Sat. 9th.	Mon. 11th.	Tues. 12th.	Wed. 13th.	Thurs. 14th.
Anglo Amer. Corp	24 9	25 6	25 0*	24 3	24 6	24 3*
Apex Mines			6 6*		6 6*	- -
Aurora Wests			6 3†	6 3†	6 6†	5 6
Brakpan Mines	54 0	54 6	54 6*	54 3	54 0*	54 0*
Bushveld Tins	0 4*	0 4*	0 4*			0 3*
Cinderella Cons.	4 0			3 6*	4 0	
City and Subs	2 0*	2 0*			2 2	2 0*
City Deeps	53 6	52 6*	52 6*	51 0*	51 6	
Clydesdale Colls	—	21 0†		20 0†		
Con. Diamonds	17 9	18 4½	18 3	17 6	17 9	17 7*
Con. Investments	28 0	28 6*	28 6*	28 6*	28 6*	
Con. Langlaagtes		17 6†		15 0*		16 3
Con. Main Reefs	14 6	14 3*	14 6	14 6	14 3	14 3*
Con. Mines Select.	18 6†	17 0*	18 6†	17 3*	19 0†	
Coronation Colls.						35 0†
Do. Freeholds			1 0†		0 6*	0 6
Do. Syndicates	4 9*	4 9*	4 10*	4 9*		4 6*
Crown Diamonds	5 9	5 10½	5 10	5 9	5 6*	5 6*
Crown Mines	57 9*	58 0	57 9	55 9	56 6	56 3
Daggafontein Mines.	3 10*	4 1	4 0*	3 9	3 8*	3 6*
East Rand Coals	1 8*	1 8*	1 8*	1 8*		1 6*
East Rand Deeps	1 3*	1 3†	1 3†	1 0†		0 10*
East Rand Minings		10 0*	11 6*	11 6*	11 3*	11 0*
East Rand Props.	12 3	12 1*	12 3	12 0	11 9*	11 9*
Eastern Golds	0 7	0 6*	0 6*	0 6*	0 6*	0 6*
Ferreira Deeps	9 9†	9 3	9 6†			9 0*
Frank Smith Dmds.	4 6	4 6	4 3*	4 3	4 4*	4 0*
Geduld Props.	65 9*	65 0*	65 6	64 9†	64 6	
Geldenhuis Deeps	8 6†	8 9†				
Glynn's Lydenburgs.	15 0*					
Govt. Areas	104 0*	105 0*	106 0*	104 6	103 0	103 0
Hume Pipes	12 0	—	14 0†	12 0	11 0	
Knight Centrals	4 6*	4 8*	4 8*	4 8*	4 6*	4 6*
Lace Props.	10 0*	10 0*	10 3*		11 0†	
Leeuwpoort Tins	5 9*	5 9	6 0†	5 7*	6 0†	5 7*
Luipaardsvlei Est.	4 6*	4 9*	4 9*	4 9*	4 9*	
Lydenburg Farms	4 6*	4 9*	5 0†	4 3*	5 0†	
Meyer and Charltons		70 0*				74 0*
Middelvlei Est	2 3†		2 3†	–	2 3†	1 6*
Modder B.'s	34 3	34 0	33 9	33 3	32 9	33 0
Modder Deeps	46 6	46 6	46 0*	46 0	46 3	46 6
Modder Easts	9 3	8 10	9 0	8 10½	8 10*	8 11
Natal Navig. Colls.		30 0†	30 0†	30 0†	30 0*	30 0*
National Banks	210 0	210 0	210 0*	210 0*	210 0*	
New Eland Dmds.	38 0	42 6*	46 6*	47 0	39 0*	41 0*
New Era Cons.	8 0†	–	7 7	7 9	8 0*	8 0
New Geduld Deeps.	1 6*	1 6*	1 6*	1 6*	1 6*	1 7*
New Kleinfonteins	8 9	8 6*		8 9*	8 3*	8 6*
New Modders.	84 6	84 3	83 0*	83 6	82 3*	82 6
New Primrose	6 0*		5 9	5 9†		
New Unifieds	5 0†	5 0†	5 0†			

	Fri. 8th.	Sat. 9th.	Mon. 11th.	Tues. 12th.	Wed. 13th.	Thurs. 14th.
Nigels						6 0*
New State Areas	34 0*	34 3	34 3	33 6	33 6*	33 6*
Nourse Mines	17 9	18 0	18 0†	17 0*	17 3*	17 6
Pretoria Cements	13 9	14 0*	15 0	14 6*	14 6*	14 6
Rand Colleries	1 6*	1 6*	1 6		1 3*	1 3*
Rand Nucleus		1 2*				1 1*
Randfontein Centrals	16 3*	15 9*	15 6*	15 0*		15 6*
Do. Estates	24 4½	24 4½	24 1½	23 1½	23 9	23 9
Rouxville Dmds.	1 7½	1 6*	1 7*	1 7*	1 6*	1 6*
Roberts Victors	8 6*		8 9*	8 6*	8 0*	8 0*
Rooibergs	3 0*	3 0*	3 0*	3 0*	3 0*	3 0*
Ryan Nigels	3 9	4 0†	3 9*	3 9*		3 9*
Simmer and Jacks	4 4	4 0	4 1	4 3	4 2	4 0*
S.A. Breweries			30 0*			30 0*
S.A. Lands	5 0*	5 0*	5 0*	5 3†	4 9*	4 9*
Springs Mines	52 0	51 6	51 6*	50 9	51 0	50 6
Sub-Nigels	13 3	13 0*	13 6*	13 6†	13 6†	12 9
Swaziland Tins	6 0*		6 0*		6 0*	6 6†
S.A. Alkali		15 6*	15 6*	16 6	16 6*	
S.A. Townships			10 6*	10 3*		10 6*
Transvaal Lands	15 0*	15 3*	15 0*			
Trans. G.M. Estates.	13 0*	12 6	12 9*		12 6*	12 0*
Transvaal Silvers	14 0*	14 0*	13 9	12 6*	13 0*	13 9*
Tudors	1 0†	0 8*	0 8*	0 8*	0 8*	0 8*
Van Dyks		1 10†	1 6*	1 6*	1 8	1 6*
Van Ryn Deeps	74 0	73 6*	73 6	73 6†	71 6*	71 6*
Village Deeps	16 0*	16 3*	16 0	15 6	15 6	15 6
West Rand Cons.	5 0*	5 3	5 0*	5 3†	5 3†	
Western Rand Est.	5 3	5 3*	5 6*	5 6*	5 6*	5 6
West Springs	14 6	15 0	14 7*	14 10½	14 9	14 7½
Witbank Colls.	30 6*		36 0†		35 0	
Witwatersrands		18 6†	19 0†	18 3	18 3*	18 6
Wit. Deeps	18 9	20 0	20 0	21 0	20 0	21 3
Zaaiplaats Tins	2 2		2 0*	2 0*	2 0*	2 0*
Union 5 per cent.	£103	£103*	£103¼*	£103*	£103*	£103*
Robinson Deep "A"	33 6*	33 6*	33 6	33 0	32 6	32 0
Robinson Deep "B"	10 0*	10 0*	10 0	9 9	9 6*	9 3*
S.A. Reserve Bank	£139*		£139*	£140†	£140†	£137*

* Buyers. † Sellers.

Metal Market: Latest Prices.

Standard copper closed at £63 5s. cash and £63 12s. 6d forward; electrolytic copper at £71 cash and £71 10s. forward; standard tin at £159 2s. 6d. cash and £160 5s. forward; foreign lead at £24 cash and £23 5s. forward; quicksilver (middle) at £13; bar silver (spot) at 35¼d.; and bar gold at 92s. 9d.



INCLUDING
COMPLETE MINING DIRECTORY
OF SOUTH AFRICA.

PUBLIC SUPPLY UNDERTAKINGS
RAILWAYS
TRAMWAYS
SUGAR MILLS
&c. &c.

Published by
S.A. Mining & Engineering Journal
Stock Exchange Building
Johannesburg

A FEW COPIES STILL LEFT.

IMPORTANT NOTICE

TO

Machinery Merchants, Engineers, etc.

BY APPOINTMENT ONLY.

Travellers and the Rand Mines.

The Chamber of Commerce has received the following communication from the Rand Mines, Ltd.:

Notice is hereby given that in consequence of difficulties having arisen through indiscriminate calls having been made upon mine officials and the consequent encroachment on their time, it has been decided that no merchants' travellers will be allowed to visit the mines of the Central Mining / Rand Mines Group in future, except upon the invitation of the manager or group buyer. Should the representative of a firm wish to visit a mine on business they should communicate with the manager by letter or 'phone, in order to ascertain if the manager will make an appointment either with himself or with one of his head officials on the mine.

Most Mine Managers, Underground Managers, Engineers, Mine Buyers, etc., along the Reef keep a copy of the "South African Mining and Engineering Journal" on their desks.

LET THE JOURNAL DO YOUR REEF TRAVELLING FOR YOU!

The "South African Mining and Engineering Journal" has an appointment with the Manager and his staff each and every Saturday morning.

Let our Advertising Pages interview him on your behalf! It will be cheaper for you, and the Manager is so keen on the interview that he pays 6d. a week for it!

ADVERTISE IN THE

S.A. MINING AND ENGINEERING JOURNAL,

"THE SILENT SALESMAN"

that reaches Mine Managers from Kimberley to Katanga and from South-West Africa to Vryheid.

ENGINEERING SECTION.

Motor Trucks for Mine Transport.—I.

A DESCRIPTION OF THE ECONOMICAL USES OF MOTOR TRUCKS IN MINING.

The question of transport on the mines is coming in to increased prominence of late as part of the campaign to reduce working costs. Motor trucks, introduced to this country from America, where they are doing wonderful work, are now being successfully used on the mines of the Katanga, and promise to be employed with good results on our mines.

Motor trucks now play a large part in economical mining methods both in the coal and metal mines of the U.S.A., and the following facts contain a very obvious lesson for South Africa, where the ox-wagon is now recognised as a costly and inefficient mode of transport.

There are about 4,000 coal mines in the United States. About 2,000 have railroad connections, but this does not mean that these 2,000 have no use for trucks, since many other things in addition to coal must be transported. Operators who handle large tonnage of coal almost always have railroad connections at the mines and are equipped to load directly into the freight cars for transportation of their products to required points. On the other hand they may supply local needs. With motor truck equipment it is possible to increase the radius of the term "local" to about 50 miles, reaching points with which they have no direct rail connection, also reducing loading and unloading expense.

A Transportation Problem.

Coal mines are usually located some distance from the local freight depot or supply stores. They require large quantities of supplies such as shovels, picks, jackhammers, drills, mine machinery, pipe, mine props and timber, as well as repairs which are received in less than carload shipments and must be transported from the local station or store to the mines. The 2,000 coal mines that do not have railway connections should, regardless of tonnage, closely investigate the motor truck, as their business is nothing more than a transportation problem and might be increased by the use of motor trucks.

But by far the most expensive operation connected with the production of coal by wagon mines, is the conveying of the coal from the mine to and into the freight cars. The system most generally used up to the present time has been to draw the coal from the mine to the railroad by means of two-horse teams, and then to shovel the coal by hand into the open coal car. This is quite an expensive method and constitutes the biggest item of cost of producing coal from wagon mines. A man and team can deliver from five to eight loads a day, depending upon the distance to be hauled.

Mine Owners Turn to Trucks to Reduce Costs.

In order to make delivery fast and sure, the mine owners are now turning to trucks. Some interesting comparisons between horses and motor trucks are, therefore, in order. One mine owner gave an example of the time saved by the use of trucks, stating that he had a half-mile haul and that at the railroad there were facilities for handling the coal so that it was possible for him to dump his load into a coal pit, where the coal was loaded into the cars by means of a bucket conveyor. He states that careful checking showed that his two-ton truck loaded an average of seventy-seven tons in four and one-half hours. He also stated that it would have required three to four teams to do this work, these teams equipped with dump wagons so that no time would be lost in unloading. This clearly shows the great saving not only in time but in expense of handling coal from the mine to the car. An average cost of coal production at the present time when handled by teams will perhaps be interesting. These costs vary considerably with the location of the mine and the facilities it has for handling the coal.

	Average Cost.
Mining 1 ton of coal	$1.50
Hauling to mouth of mine	.15
Hauling from mouth to car, including shovelling into car	1.50
Royalty	.15
Overhead	.25
Total Cost per Ton	$3.55

Trucks Greatly Lower this Cost.

If instead of team and wagon, a two-ton truck is used, all items (such as operating expenses, drivers, depreciation, insurance, licence, etc.) will cost approximately $19.00 per day, or less, and could haul a minimum of thirty-eight tons per day. It will be seen that the cost per ton would be 50 cents instead of $1.50. This cost will vary in each case according to the distance to be hauled and the facilities at either end for loading and unloading the coal.

Due to the fact that the roads are usually unimproved, a two-ton truck is generally used. There is no reason why a three and one-half or five-ton truck or over could not be used, and they are where conditions warrant, provided the roads are improved and will support that weight during all seasons of the year.

Iron Ore.

There are about 400 iron mines in the United States. Their requirements for the use of motor trucks are about the same as in the coal mining industries, except that the ore is shipped to smelters or iron and steel mills and not used locally in its raw form.

Copper, Lead and Zinc.

The methods used for mining copper, lead and zinc are alike, and often these ores are found in the same mine. There are about 2,400 mines in this group, all having more [illegible] of the motor truck. About 75 per cent. of the operators have to transport both their products and supplies to and from the local station or supply store as tonnage of ore shipped from any one mine or mill is not great enough to afford direct railway connection. The amount of supplies and machinery required by mining and milling these ores is much greater than that required for mining iron and coal of equal tonnage, as the operation is more difficult.

(To be Continued.)

British Engineering Standards.

We have received from the South African branch of the British Engineering Standards Association the following particulars regarding specifications, etc.

B.S. Specification No. 128-1922: Bare Annealed Copper Wire for Electrical Machinery and Apparatus.

The specification, which gives dimensions and resistances of annealed copper wires, is issued to meet the needs of the users of copper wire for winding electrical machinery and apparatus and refers only to bare annealed high conductivity copper wire. The values of the resistance given have been calculated from the value for the resistivity of copper laid down by the I.E.C. The resistivity of commercial copper at the present time is variable and therefore a tolerance on the standard values of resistance of one and a half per cent has been adopted for use until such time as conditions in regard to copper improve. Following the general trend of modern practice, the sizes are designated by the diameter expressed in decimals of an inch, and should be styled "British standard sizes" (B.S.S.) of wire.

The importance of aiming at the use of a small number of sizes by the designers of plant lies in the need of users to carry stocks of all sizes in which they are interested for rewinding purposes; therefore it is particularly important, especially for colonial and foreign customers, and for Government use abroad, that the number of such sizes be restricted as much as possible. With a view to encouraging reduction in the number of sizes commonly used, the twenty-nine sizes which constitute the even numbers of the S.W.G. are classed as primary standard sizes. The remaining twenty-eight are secondary standard sizes. The use of the third class or exceptional standard sizes should, it is urged, be restricted to the utmost.

B.S. Specification No. 7-1922: Dimensions of Insulated Annealed Copper Conductors for Electric Power and Light.

The revision of B.S.S. No. 7 contains all the information relating to sizes, tests, standard thicknesses of dielectrical, etc., given in the July 1919 edition, with the addition of a new size of cable 0.03 sq. inch in area. Standard thicknesses for cab tyre sheathing have also been incorporated.

B.S. Specification No. 152-1922: Dimensions in Metric Measure of Insulated Annealed Copper Conductors for Electric Power and Light.

B.S.S. No. 152-1922 is the metric edition of B.S.S. No. 7-1922, including all the recent modifications to the latter. One additional size of cable of 1.5 sq. mm. area has, however, been included, as this is a size commonly used in countries using the metric system.

Copies of these specifications may be obtained from Hortors, Ltd., Johannesburg, price 1s. 2d., post free.

THE WORLD'S COPPER PRODUCTION.

The organisation formed by American mining interests under the title of the American Bureau of Metal Statistics has now issued its second annual report concerning the world's production of certain nonferrous metals. Having regard to the prominent position occupied by the United States in the matter of the output of copper and by the two countries directly dependent upon the States—Mexico and Chile—the figures for 1921 show very clearly how the industry was operated on short time in that year. In round figures the total production of the United States, Canada, Mexico, and Cuba is returned at 256,000 tons in 1921, as compared with 663,000 tons in 1920, and 1,019,000 tons in 1918, and the United States turned out 216,000 tons in 1921, as compared with 576,000 tons and 879,000 tons in the other two years respectively. The quantity apportioned to South America—Chile, Peru, and Bolivia—is 99,000 tons for 1921, 135,000 tons in 1920, and 146,000 tons in 1918; to Europe, 56,000 tons 46,000 tons and 75,000 tons in three years respectively; to Asia (Japan and other countries), 51,000 tons, 66,000 tons and 90,000 tons; Australia, 19,000 tons, 26,000 tons and 41,000 tons; Africa, 39,000 tons, 30,000 tons and 31,000 tons; and to other countries, 5,000 tons for each of the three years. As the aggregate for the whole world the statistics give 529,000 tons for 1921, 975,000 tons for 1920, and 1,412,000 tons for 1918. In addition, the world's production of zinc is mentioned at 458,000 tons last year, as contrasted with 727,000 tons in 1920 and 810,000 tons in 1918, while the corresponding figures for lead are 853,000 tons, 907,000 tons, and 1,190,000 tons in the three years respectively.

THE WORLD'S STRUGGLE FOR OIL.

The current issue of the "Guaranty Survey," the monthly publication of the Guaranty Trust Company of New York, discusses at some length the "World Struggle for Oil," though mainly, of course, from the American viewpoint.

A prominent feature of the petroleum industry in the States at the present time is the continued extraordinary accumulation of stocks of crude oil and of certain refinery products, particularly gas and fuel oil. Gasoline stocks at the beginning of May were also of record amount, but when allowance is made for the year-to-year growth and seasonal variation in consumption, the reserves are perhaps not disproportionately large. The unusual accumulation of crude may reflect a belief that, with the further recovery of business in general, there will be such a growth in oil consumption as would soon reduce the stocks to normal proportions, or perhaps that there may be an early and marked reduction in output. It is not surprising, therefore, that questions of new or revived oil concessions in Russia were prominent in the recent discussions at Genoa. In 1913 Russia produced one-quarter of the world's output of oil.

Oil Reserves in the States.—The unmined stocks of petroleum in the United States were recently estimated at 9,150,000,000 barrels, and world resources at from 65 to 70,000,000,000 barrels. A significant feature of the American consumption is the fact that that country's oil resources are being utilised more rapidly than are the supplies outside the States—in proportion much more rapidly. More than three-fifths of the world's output is produced in the United States. The reported output in the States increased from 248,000,000 barrels in 1913 to 469,000,000 in 1921, and the estimated world output in the same period increased from 384,000,000 to 759,000,000 barrels. America's reserves represent about twenty years' supply at the present rate of production. Production of crude oil in the States, added to imports, have exceeded consumption for more than two years. In consequence, stocks have accumulated in unusual quantities, especially since 1920, and price movements apparently have been more or less inconsistent with these accumulations.

The Rhodesia Railways Report.

SOME INSTRUCTIVE FIGURES—UNION AND RHODESIAN RAILWAY COSTS.

The report of the General Manager of the Beira and Mashonaland and Rhodesia Railways for the financial year ended September, 1921, shows very fully the results of a year's working and it indicates both the value of the asset the South African Government has offered to take over and what prospect there is of the system being otherwise able to reduce the present rates, as to which, however, some useful concessions have been lately announced to help the agricultural industry through its period of depression. The railways themselves are suffering from this depression, to an extent which does not appear in the report. Thus, while the total earnings for the year ending September last were £3,102,363, the General Manager's recent Bulletin showed for the subsequent six months only £1,420,696 (or at the rate of £2,841,392 for the year). The last financial year's gross operating expenditure was £2,098,215 (including £350,000 for renewals of permanent way and rolling stock). Though the cost of working has been reduced during the subsequent six months, there was an estimated deficit of £68,852 on the results from October to March last, as compared with the £111,673 in the previous twelve months' report, "after meeting all charges in South Africa and London." The report mentions that "the set-back experienced on the South African Railways was scarcely felt in Rhodesia, though it was surely coming." It has since come, as the Bulletin showed, the decreased gross revenue lowering the net operating revenue for the six months mentioned by £9,640 (despite more economical working), while the fixed charges for the period rose by £47,000. Thus, while for the twelve months ending in September last there was a balance after meeting all charges of £111,673 (the share capital is put at £826,395, exclusive of debenture issues and loans which bring up the amount to £16,212,901), it appears that the current year must result in a deficit. Commenting on this, the "Bulawayo Chronicle" states:—

A Typical Scene on the Rhodesian Railways

> An impression from the annual report and the subsequent statements is that with a stoppage of the present traffic decline, and such economies of working as might be expected from a linking up of Rhodesian railway administration with that of the South, the Rhodesian system could be made to show a profit, even on considerably lower tariffs. There is an interesting annexure in a table giving the revenue and expenditure accounts for the twelve years ended September, 1921 (excluding the Rhodesia-Katanga junction railway from Broken Hill to the Congo border). This shows eight years of surpluses and four of deficits, but the net result for the twelve years was a surplus of £1,427,350, available for the reduction of former deficits.

We observe that the "Cape Times," from this average surplus of nearly £120,000 per annum, draws favourable conclusions as to the probable results of working the Rhodesian railways under the stimulus of the lower Union rates, saying that even with these lower rates "we might reasonably look to the Rhodesian Railways within a very few years of Union ownership to pay their way." It does look like it, especially when we remember that our railways would not then have the difficulties hitherto experienced of finding money for capital expenditure, with the occasional necessity of borrowing it at high rates of interest. While the capital value of the Rhodesian railways represents more than eleven of the nineteen millions to be added to the Union debt by the inclusion of Rhodesia, this sum would bring a very solid asset for the other side of the account (as also the acquisition of the unalienated land), and the prospect that the Rhodesian lines, in conjunction with the rest of the South African system, would pay their way as a well-equipped going concern not merely under the present rates of the Union but with the share that they would get of those impending further considerable reductions of South African railway rates that are intended.

For ourselves we doubt very much whether the Rhodesian Railway system will be worked more cheaply if it is absorbed by the Union. The Rhodesian Railways are operated on far less costly lines than the S.A.R. is worked. There may be and should be reductions in the cost of operating the Union system in the near future, but we think it is a point which Rhodesians should bear in mind that the Union Railways have a vastly higher wages bill per mile than the Rhodesian system

Swaziland Mineral Concessions.

A Meeting of Mineral Concessionaires will be held on 28th September, 1922, at Corner House Board Room (2nd Floor) at 2.30 p.m., to consider position *re* Swazi Mineral Tax 1920 and proposed scheme for throwing open mineral concessions for public prospecting. All Mineral Concessionaires are invited to be present personally or by authorised representatives.

WM. POTT, Convener.

28th August, 1922.

PAX NON-BREAK STEEL

EASY to work and reliable in its oil-hardening, "Pax Non-Break" brings peace to the tool room and it cuts your costs to bits. This steel was originally made for chipping and rivetting, but its use does not end there. Hand Chisels and Sates made from it show a marked economy. Punches and Drills are daily made from this product, and for Press Tools it is supreme.

Sole Agents for South Africa:

BARTLE & CO., LTD.
Loveday House Phone 3553 Wires: "Faggot."
P.O. Box 2466 JOHANNESBURG.
And at KIMBERLEY and DURBAN.

CARBIDE

ALL SIZES
IN 1, 5, 10, 50 lb. TINS
and 100 lb. DRUMS

Apply: MANAGER,
RAND CARBIDE, LTD.,
SOUTH GERMISTON
'Phone 252 Germiston.

THE
MINERAL
RESOURCES
OF THE
BRITISH EMPIRE
AND
FOREIGN COUNTRIES
(WAR PERIOD).

A series of digests of statistical and technical information relative to production, consumption, and value of certain minerals and metals compiled by the Imperial Mineral Resources Bureau.

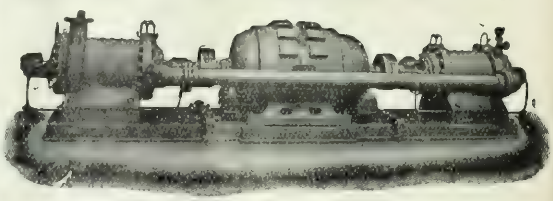
Aluminium and Bauxite	9d.	(10d.)
Antimony	1s. 0d.	(1s. 1d.)
Arsenic	6d.	(6½d.)
Asbestos	1s. 0d.	(1s. 1d.)
Barium Minerals	9d.	(10d.)
Bismuth	6d.	(6½d.)
Chrome Ore and Chronium	1s. 0d.	(1s. 1d.)
Coal, Coke and By-Products:		
Part I.	3s. 6d.	(3s. 8d.)
Part II.	6s. 6d.	(7s. 0d.)
Part III.		(in the press)
Cobalt	9d.	(10d.)
Copper	4s. 0d.	(4s. 3d.)
Felspar.	6d.	(6½d.)

All prices are net, and those in parentheses include postage.

A FURTHER LIST WILL APPEAR IN THE NEXT ISSUE.

H.M. STATIONERY OFFICE,
Imperial House, Kingsway,
London, W.C.2, England.

SULZER
HIGH-LIFT CENTRIFUGAL
PUMPS.
For Mine Drainage, Waterworks, Etc.



Pumping Set suitable for lift of 2,500 ft.

LARGE LOCAL STOCKS IN MEDIUM AND LOW-LIFT PUMPS.

For particulars apply to:

RICE, WILSON & HERD,
86, 87, 88, 96, Standard Bank Chambers, Commissioner St.
P.O. Box 930 Telephones 2299 & 2300. JOHANNESBURG.

Also South African Agents for
CALLENDER'S CABLE & CONSTRUCTION CO., LTD.
BRITISH THOMSON-HOUSTON CO., LTD., etc., etc.

TRADE AND INDUSTRIES SECTION.

Week in the Mining Material and Engineering Trades.

BUSINESS DULL—IRON AND STEEL—TIMBER AND BUILDING MATERIALS—ELECTRICAL GOODS —S.A. RAILWAYS AND HARBOURS—SOUTH AFRICA'S WIRELESS STATION—METAL MARKET.

General.

The week under review has again been a dull and inactive one as far as mining material business is concerned. The present quietness, said a well known commercial man, might, he thought, be attributed to economic measures adopted by the mining industry during the crisis in the early part of the year. In some quarters it is thought that the present abstention of buying on the part of the mines may be traced to the opportunity afforded them during the recent upheaval of cleaning up their levels, drives, etc., and finding a mass of material on hand which, during the ordinary run of business, had been lost sight of. The finding of a lot of material temporarily set aside, which the strike period allowed many companies to do, may, some people think, be the cardinal cause of the mines' poor buying during recent months. There may a lot in this supposition. Such recoveries of material, although bad for merchants now, would be all to the good of the mines and would serve a very good purpose for the future. The concensus of opinion in the mining material world is that, despite the present dullness, we shall see improvement in general business conditions before the end of the year. In the view of a very shrewd judge, the recent agreement between France and Germany in regard to rebuilding the devastated areas may create a new spirit, to the benefit of both countries.

Things are still very quiet, said a very responsible merchant this week, but the indications point to a slight improvement. The currency question at Delagoa Bay is rather critical at the moment, but the general opinion is that it will bring matters to a head pretty quickly, because the present disabilities in respect of currency mean either entire stoppage or some drastic modification in the Act, which will reflect on things here. This influential merchant, although things were shaping well, did not look for any decided improvement in business conditions before the end of the year. With regard to the European position, at any rate the agricultural end of it, we cannot, he said, get any price for our exports—wattle bark from Natal being especially out of the market, and the export of mealies in respect of price is leaving much to be desired. He thought that the Continental competition is still keen, but not so dangerous as hitherto, but prices there were rising in consequence of internal troubles, which were allowing British manufacturers to forge ahead.

The acceptance of the Conciliation Scheme by the South African Mine Workers' Union has given universal satisfaction. It is generally felt that a fair trial of the scheme should prevent future friction.

Iron and Steel.

Business during the past week has again been very quiet, and there is at present no sign of improvement; prices are firming up slightly all round, and in the opinion of good judges many shortages will be apparent as soon as things get back to normal.

Latest Local Quotations.—Dunswart iron, 18s. to 23s. per 100 lb. Union Steel Corporation, Limited, 19s. to 22s. 6d. Imported iron and steel, flats, rounds and squares, from 25s. 6d. to 35s.; channels and joists, 25s. to 28s.; imported angles, 22s. to 30s.; tee iron, 27s. 6d.; shafting, $\frac{3}{8}$ in. down to 3-16 in., $7\frac{1}{2}$d. to 9d lb. $\frac{5}{8}$ to $1\frac{1}{2}$ in., $6\frac{1}{2}$d.; $1\frac{3}{4}$ in. to 6 in., $4\frac{1}{2}$d.; steel plates, 1-16, $\frac{1}{8}$, 3-16, 20s. to 25s.; 10 × 5 and larger, 25s.; $\frac{1}{4}$ to $\frac{3}{4}$, 22s. 6d. to 25s.; spring steel, 7d. to $8\frac{1}{2}$d. lb.; bolts and nuts, hexagon, $\frac{3}{8}$, 7 5-16d. lb.; $\frac{1}{2}$ in., $\frac{5}{8}$ and $\frac{3}{4}$, 33s. 6d. to 47s. 6d. per 100 lb.; hexagon nuts, $\frac{3}{8}$, $8\frac{1}{2}$d.; $\frac{1}{2}$ in., $\frac{5}{8}$ and $\frac{3}{4}$, 5d.; fish plate bolts and nuts, $\frac{3}{8}$ in., 6d. lb.; $\frac{1}{2}$ in., 4d. to $4\frac{1}{2}$d.; $\frac{5}{8}$ in. and $\frac{3}{4}$ in., $3\frac{1}{2}$d.; dog spikes, 26s. per 100 lb.; rivets, $\frac{1}{4}$ in., 6 5-16d.; $\frac{3}{8}$ in., 5d.; $\frac{1}{2}$ in and $\frac{5}{8}$ in., 37s. 6d. to 40s. per 100 lb.; $\frac{5}{8}$ in., 50s.; brass rods, $\frac{1}{4}$ in., 1s. 3d.; $\frac{3}{8}$ in., 1s. 6d.; $\frac{1}{2}$ in., 1s.; hexagon brass rods, 1d. lb. extra; copper rods, $\frac{3}{8}$ in., 1s. 9d.; $\frac{1}{2}$ in., 1s. 10d.; $\frac{5}{8}$ and upwards, 1s. 3d. to 1s. 9d. lb.; tool steel, 2s. 6d. to 3s. 3d.; brass sheets, 1s. 10d. to 2s. lb.; copper sheets, $\frac{1}{4}$ in. to 18 gauge, 1s. 10d. lb.; 20 gauge, 1s. 11d.; 22 gauge to 28 gauge, 2s. lb.; firebox copper, 2s. 1d. lb.; copper tubes, $\frac{1}{4}$ in. 3s.; $\frac{3}{8}$ to $\frac{5}{8}$ in., 2s. 4d.; $\frac{3}{4}$ to $4\frac{1}{2}$ in., from 2s. to 2s. 2d. lb.; phosphor tin, 2s. 7d.; ingot tin (Lamb & Flag), 1s. 11d. lb.; ingot lead £28 per ton; drill steel, $4\frac{1}{2}$d.; hollow, 7d. to 8d.

OSBORN'S
THE
STEEL PEOPLE.

WE ARE ACTUAL MAKERS
OF THE PRODUCT WE
OFFER YOU
THEREFORE
OUR PRICES MUST BE
RIGHT.

SAMUEL OSBORN
(S.A.), LIMITED,
Box 3162. 'Phone 4673.
JOHANNESBURG.
WORKS :— CLYDE STEEL WORKS, SHEFFIELD.

1¼ in., 6½d. to 8d.; wire nails, 25s. to 30s.; shovels, 27s. 6d. to 44s. 6d. doz.; wheelbarrows, 35s. to 42s. 6d.; picks, 32s. 6d. to 40s.; pick handles, 25s. to 30s.; hammer handles, 14 in., 4s. 1½d. to 5s.; 18 in., 7s.; 24 in., 8s. 6d. to 10s. 6d.; 30 in., 14s. to 18s.; 36 in., 22s. 6d.; piping, ½ in. black, 4½d.; 1 in., 5½d.; 2 in., 1s. 1d.; galvanised, ¾ in., 5d.; 1 in., 7¾d.; 2 in, 1s. 7d.; ¾ in. steam, 5¾d.; 1 in., 8d.; 2 in., 1s. 6d.; barbed wire, "Northern," 60 lb., 12½ gauge, 19s. 6d. to 21s. per coil, plain galvanised fencing wires, No. 8 gauge, 100 lb. coils, 20s. per coil; No. 10 gauge, 100 lb. coils, 24s. 6d. per coil; No. 12 gauge, 100 lb. coils, 26s. 6d. per coil; bulb tee fencing standards, 14 lb., 19s. 6d. per dozen; 12 lb., 23s. 6d. per dozen; black baling wire, 14 gauge, 19s. per coil, 100 lb.; 12 gauge barbed wire, 22s. per coil, 96 lb.; plain wire, No. 8 galvanised, 20s. per coil, 100 lb.; fencing standards, 21s. for 12's and 24s. for 11's; droppers, 40s. per 100; screening, 3s. to 9s. 6d. per square yard; cyanide, 1s. 6d.; zinc shavings, 1s. per lb.

Second-hand Machinery Market.

The second-hand machinery market has not had a very big rush this week, excepting for orders from our northern mines for spares required. Small syndicates are cropping up still, mostly north, and are in the market for small plants. There have been some inquiries for tube mills, and sellers are holding out for their prices, as in this particular line there are very few second-hand ones to be had. As tube mills are the coming plant for the extraction of gold, this is understandable, new syndicates now being formed preferring them to batteries. There is no getting over the fact that the western reefs are being patronised and showing good results. Battery spares are becoming scarcer every day, and are hardly obtainable, the more knowing rely on their officers picking up what bargains offer and saving their companies the cost of new ones, which are still at good prices, in fact showing little reduction from that obtaining two years ago.

Engineering Shops.

These are better employed than for some time past, both in town and along the Reef, and the prospects for the future are decidedly brighter. Most of the engineering works have recently taken on additional hands.

British Iron and Steel Prices: Mail Advices: Wholesale Prices in July.

The average level of wholesale prices in July was 163·7, as compared with 163·2 in June and 198·2 in July last year. The iron and steel group showed a decrease of 0·7, and other metals and mineral ore of 0·4 as compared with June. The respective figures for August are 155·9 and 138·3. Staffordshire common bars, 13s.; galvanised corrugated sheets, 20s. per cwt. Steel nails have received a further reduction of 10s. per ton. Tin plates, basic price, 20 by 14, 20s. 6d. to 21s. 6d., f.o.r. Birmingham. Galvanised wire, 4 to 8 gauge, 20s. 6d. per cwt.; bundle wire in 7 lb. rings, 8 gauge basis, 28s. 6d. per cwt.; strand wire in ½ cwt. coils, 7 ply by No. 4 basis, 28s. 6d. per cwt.; barbed wire in ½ cwt. reels, 23s. 6d. per cwt.; wire nails, 0 to 7 gauge, 21s. per cwt.; cut steel nails, 3 in. to 6 in. clasp, 20s. per cwt.; galvanised corrugated sheets, 22 to 24 gauge, 21s. 6d. per cwt.; sheets, flat steel sheets, 22 to 24 gauge, galvanised, 24s. per cwt.; black,, 19s. per cwt.; bolts and nuts, 50 per cent. discount. No. 1 Cleveland is strong at 95s. per ton; No. 3 G.M.B., 88s.; No. 4 foundry iron, 87s. to 87s. 6d.; No. 4 forge, 85s.; mottled and white, 80s.; East Coast mixed numbers, 91s. per ton, f.o.b. Coke tins, I.C. 14 x 20 (112 sheets, 108 lb.), 19s. 6d. per box; I.C. 28 x 20 (112 sheets, 216 lb.), 39s. per box; I.C. 16 x 8¾ (124 sheets, 110 lb.), 19s. 9d. per box; I.C. 20 x 10 (225 sheets, 156 lb.), 27s. 6d. per box; I.C. squares and odd sizes, 20s. per box; mild steel, £12 5s. per ton basis; galvanised sheets, £16 per ton basis.

Galvanised Sheets.

Quotations have advanced from £16 to £16 10s. for 24-gauge corrugated sheets in bundles.

Steel.

Angles, £9 10s.; ship plates, £10.

Iron and Steel.

Quotations of leading English iron and steel firms have dropped about £1 per ton. In Scotland the prices for boiler plates have receded from £13 10s. to £12 10s. Export prices have a tendency to become firmer. Competition from the Continent in the British market has not been much in evidence lately.

PIG IRON: Business has been slow. A few parcels of Continental pig iron were booked at 76s. to 77s. 6d., f.o.b.; basic iron, 73s. 6d.; foundry pig iron for the United States, £5 3s., c.i.f. Boston.

SEMI-FINISHED MATERIALS: English 4 in. billets, £6 17s. 6d., delivered Birmingham; Continental wire rods, £8.

FINISHED MATERIAL: Steel bars, £7 7s. 6d. to £7 15s.; joists, £7 7s. 6d. to £7 10s.

TINPLATES: 19s. 4½d. for 20 x 14 basis, f.o.b. Swansea.

Iron and Steel Output.

The following figures of production by the British iron and steel industries in June have been issued by the National Federation of Iron and Steel Manufacturers. Attention is called to the fact that after steadily rising since the end of the coal strike to a figure representing about 60 per cent. of the average monthly output in 1920, the production of pig iron dropped in June to 369,200 tons. The production on the North-East Coast was 21,700 tons and on the West Coast 9,900 tons less than in May. Steel production also declined, from 462,300 tons to 400,200 tons, partly as a result of the Whitsun holidays. The imports of iron and steel in June present no special feature; there was a drop from 60,900 tons in May to 52,800 tons in June, mainly accounted for by a decrease in the imports of semi-finished material. Exports fell from 272,400 tons to 236,300 tons, of which 56,000 tons were pig iron, 37,100 tons tinplates and sheets, and 35,400 tons galvanised sheets. Returns received from 118 firms, which employed in June, 1920, 164,539 workpeople, show that at the end of June, 1922, the number in employment was 70,938, or 43·1 per cent. of the total in June, 1920. This percentage compares with 42·2 at the end of May.

Timber and Building Materials.

The building trade is steady, stocks are not plentiful, but will arrive shortly. The market in timber is firm, with a hardening tendency. The present dispute between masters and unions in the building trade, said an influential merchant this week, may have a serious effect if no settlement is arrived at soon, and naturally people are holding back. There has recently, said a big timber firm, been better indications of buying on the part of the mines.

Timber Prices.—3 x 9 deals, up to 18 teens 1s., over 18 teens, 1s. 1d.; scantlings, 10½d.; beaver boards, 4d.; floorings, 6d. to 6¼d.; ceilings, 4¼d. to 4½d.; Oregon, 5s. 6d. a cube; pitch pine, 7s. 6d. to 8s.; corrugated iron, 7¾d. to 8¾d. Furniture timber: Burmah teak, 16s. to 17s. 6d. per cube, Johannesburg; American oak, 1 in., 10½d.; 1½ in., 11d.; 2 in., 1s. at coast; Japanese oak, 11½d. at coast; West African mahogany, 1 in. to 4 in. thick, 27s. to 28s. per cube, at coast; Rhodesian mahogany, 9s. per cubic foot at mills; Honduras mahogany, 30s. per cubic foot; American yellow pine, 1s. 4d. per foot of 1 x 12 here; American pine shelving, 10d. per ft.; 3-ply wood, 3 m.m. up to 5 m.m., alder and birch, 4d. to 6½d. per sq. ft.; oak and teak, 3-ply, 10d. per sq. ft. Prices per sq. ft.; oak and teak, 3-ply, 10d. per sq. ft. Prices for bricks are the same, namely: Klompje bricks, 25s. per 100 at works; fire-bricks, £10 per 1,000 at works; mixed, 70s.; wire-cuts, £4 10s. to £5; and £5 for pressed per 1,000, at kilns; columns from 20s. to 30s., according to size; roofing tiles, Marseilles, £25 per 1,000 at the works; chimney pots, 12 in., 7s. 6d.; 15 in., 9s.; 18 in., 10s. 6d.; dry red oxide, 14s. per 100 lb.; white lime, 7s.; blue plaster lime, 5s. 3d.; blue lime, 4s. 3d.; cement, 10s. 3d. a bag; damp course and roofing, 36s. to 54s. for 1 to 3-ply. Second-hand pitch pine is very scarce; in fact, unobtainable in large

BINDING LIST NOV 1 1930

TN
1
S13
v.33
pt.1

S.A. mining and engineering journal

~~Physical & Applied Sci. Serials~~

Engineering

PLEASE DO NOT REMOVE
CARDS OR SLIPS FROM THIS POCKET

UNIVERSITY OF TORONTO LIBRARY

ENGIN STORAGE